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In dealing with the first of these objects I experienced much difficulty in finding a line to pursue. On various grounds my attention had been directed to heart conditions; I found irregular action of the heart of frequent occurrence, and I attempted to obtain an insight into the mechanism by which the different irregularities are produced. I followed for a time the practice already referred to of studying the records of the pulse-beats obtained by a Dudgeon's sphygmograph. At last it occurred to me that the irregularities seen in this way only showed what the left ventricle was doing, and the question arose as to what the auricle was doing.

This was one of those extremely simple and apparently self-evident conceptions which seem scarcely worthy of consideration, but which nevertheless bear within them the germ of a very fruitful idea; and it enabled me to obtain the first differentiation of irregularities based upon the laws governing the movements of the heart. I still remember, although it happened over 30 years ago, the occasion on which I obtained the first result of the application of this idea, in a record of an irregularity in which I was able to demonstrate that the ventricle occasionally contracted before the auricle—the ventricular extrasystole. I was led to apply the idea to other abnormalities which had baffled interpretation, and they in their turn became clearly defined. If we compare the knowledge of abnormal heart movements at the present time with that of 30 years ago the extent of the revolution that has taken place in the knowledge of this subject will be realised—a revolution that resulted from the application of the simple principle of finding out what the auricle was doing. No doubt many observers who have contributed to this revolution have carried on their work unconscious that this principle really lay at its foundation.

The same fundamental conception—the mechanism of symptoms—guided my inquiry into other phenomena of disease. Until lately only a limited success resulted, for the simple reason that there was no such clear principle for a guide. As the inquiry proceeded a better knowledge of a great number of the different signs and symptoms of disease was gradually acquired, so that it was perceived that there was some fundamental principle which governed the production of a large group of symptoms. It is now many years since this idea crystallised. When we opened an Institute for Clinical Research in St. Andrews we made the search for this principle our chief aim, and it was gradually revealed to us, although at first we scarcely recognised it because of its extreme simplicity: for we found *that the mechanism by which many symptoms are produced is due to the modification of reflexes that are normally present in the body.*[1] This theory of disturbed reflexes as the cause of symptoms of disease has begun to throw light upon many problems which we could not solve, and has afforded us a guide for the investigation into the early stages of common diseases.

The objects of this paper are: (1) to describe certain abnormal states of the heart in which the principle embodied is not the question of the action of the auricle during the irregular action of the ventricle, but the question of the action of the ventricle itself; (2) to demonstrate the application of the theory of disturbed reflexes in certain obscure cardiac conditions; and (3) to show the effect of an abnormal rhythm on the functional efficiency of the heart. This last object is of importance in order to understand that other matter essential to intelligent practice—the bearing of the cause of an abnormal sign upon the patient's future.

ABNORMAL HEART ACTION.

The following cases are illustrative of abnormal states of the heart.

CASE 1.—About 20 years ago, when I was attempting the differentiation of the various forms of irregular heart action, I singled out one peculiar form which I described in my book on the pulse, published in 1902.[2] It was a case of a woman, 35 years of age, eight months pregnant, who suffered at times from breathlessness, with irregular action of the heart. The irregularity was varied in character. Sometimes there were present ventricular extrasystoles occurring at rare intervals, and sometimes frequently. Occasionally groups of from two to six extrasystoles would appear, each group being separated by the appearance of a normal ventricular contraction; and occasionally there would be a long series of 20 or 30 of the abnormal ventricular beats, giving rise to a ventricular tachycardia. When free from the attacks of irregular heart action she felt well, but when the heart was irregular she felt breathless on exertion; I did not attend her in her confinement, but learnt that she came through it without trouble. I heard of her three years after as being in good health.

I explained the abnormal heart action as being due to premature or extrasystoles of the ventricle, occurring singly or in groups. Since that time other observers have described the same condition, and I have had a number of cases, some of which have shown other signs of considerable moment.

CASE 2.—Female, aged 57. Seen in January, 1919; complains of breathlessness coming on during the night and also on slight exertion; gives a history of having good health until 20 years ago when she began to have asthma, very slight attacks at first, but in later years they have become severe and more frequent; lately she has had periods of several months with attacks nearly every night. Up till ten years ago she was otherwise well and vigorous and able to do her usual housework and had no trouble in walking. Latterly she has become very breathless on exertion and can only walk a short distance. Pulse irregular, due to extrasystoles occurring singly and in groups; no jugular pulse. Heart slightly enlarged, the dullness extending out to the left nipple line. The sounds clear; chest slightly emphysematous, and no other abnormal sign could be detected. Digitalis was given, and two days' afterwards the pulse was quite regular. She continued to take digitalis as she thought that the heart's condition was better. She was able to continue her household duties, but gradually became weaker, with swelling of the legs and very distressing attacks of asthma in the night. From time to time record of the pulse was taken, and frequently the irregularity was present, always showing the presence of groups of extrasystoles.

On Jan. 21st, 1921, her state was as follows: Very spare, slight œdema of the legs, pulse irregular, due to the occurrence of an extrasystole after every second normal beat. The heart dullness half an inch beyond the nipple line, the sounds free from murmur. She is very breathless on the slightest exertion and suffers from great difficulty in breathing in the night. She has been taking digitalis during the last two years, taking 30 drops of the tincture a day. Digitalis was stopped; two months later the stoppage had produced no effect.

CASE 3.—Male, aged 56. Seen in January, 1917; brought to me by his doctor, who informed me that the patient was having an attack of angina pectoris in the waiting room. I had him brought in to the consulting room and found him suffering from pain of considerable severity, situated over the middle of the sternum. I felt his pulse and found it rapid and irregular, and took a long tracing, of which Figs. 1 and 2 are parts. Three minutes after Fig. 2 was taken he said he felt free from pain, and I took another tracing and found the heart had become quite regular, as shown in Fig. 3.

He gave a history of fair health until three weeks previously, when he began to suffer from attacks of pain lasting 3 or 4 minutes. Since then he has had a number of attacks; he says that they only occur when his heart becomes irregular; he is conscious of this irregularity. The doctor confirmed this statement. I found him a well-nourished full-blooded individual; heart only slightly enlarged; sounds clear, and blood pressure over 230 mm. Hg (see Fig. 4). The radial pulse, both during the irregular period and the regular period, showed the pulsus alternans (Figs. 3 and 4). There was a slight trace of albumin in the urine; specific gravity 1007. After this he suffered frequently from attacks of pain, but there were long periods when the heart was perfectly regular and he was fit for a fair amount of exertion. In spite of various treatments the attacks continued to recur until a year later, when he died during coitus.

CASE 4.—Male,* aged 58, seen May 26th, 1920. Complains of pain over left breast and breathlessness on slight exertion. Has lived many years in India and has suffered from malaria and attacks of diarrhœa for several years after 1896; otherwise a healthy man. He felt well and fit until January, 1919, when being engaged in severe bodily labour he felt a pain in his chest which became worse until he desisted from the heavy work. At this time the weather was cold and the pain was easily provoked when he walked out into the cold air. He went to bed for three weeks and for a few days the pain kept recurring, but gradually abated. The pain, however, ever since can be provoked with exertion, and particularly during periods of heart irregularity, of which he is conscious. At these times he is pulled up on walking 200 or 300 yards because of the pain; the latter is continuous, sometimes attaining a great severity, but never coming on in short spasmodic attacks; it is felt across the chest and down the inside of the left arm. When at his best, and when the heart is not irregular, he can walk from two to six miles on the level at a quiet pace. On an incline he is then pulled up by breathlessness and occasionally by pain.

On examination he is a well-nourished, healthy-looking man, though slightly sallow; heart enlarged, dullness extending one inch beyond left nipple line; a systolic murmur loudest at the apex; rhythm markedly irregular. A slight trace of albumin in the urine; an X ray examination showed nothing but a slight enlargement of the heart.

A tracing was taken of his radial and jugular pulses; it showed a very disorderly rhythm varying in a peculiar manner, of which Figs. 5, 6, and 7 are examples. The key to the irregularity is shown in Fig. 7, where the radial pulse shows a regular grouping of beats with one big beat followed by two small ones. The jugular pulse, however, shows an auricular beat perfectly regular in all three tracings. The small beats in the radial pulse are not due to normal ventricular contractions following the auricular beats, as can be seen from Fig. 6, where there are an irregular series of the small beats in the radial occurring at a greater rate than the auricular beats. From these tracings it is evident that the irregularity is due to ventricular beats independent of the auricular beats, except at the beginning of a group, where there is a large radial beat, which is seen to be preceded by an auricular wave.

Hitherto the cases of this condition I have seen were paroxysmal, and I had no clear idea of the treatment. Finding this arrhythmia was not paroxysmal but persistent, we put him upon digitalis (1 drachm per day) on May 29th. That night he was very ill, suffering from an attack of cardiac asthma and Cheyne-Stokes breathing, with pain across the chest. He speedily responded to the treatment, and the second day his pulse became at times slow and regular, as in Fig. 8, and at other times irregular, as in Figs. 10 and 11. As soon as his pulse became slow he felt remarkably well; pain disappeared, and he was able to take a considerable amount of effort without distress. The digitalis was stopped to see whether the improvement was due to the drug, and in a few days he was as bad as ever, the small beats tending to recur, as shown in Fig. 9. He was again put on digitalis and in a couple of days he was greatly improved; the pulse became slower, and many normal beats appeared, as in Figs. 10 and 11. He was told to watch the effect of the drug and to diminish the quantity when he felt very well, and take it just when he began to feel the slightest return of his weakness, so that he should regulate the quantity of his drug according to his condition. He continued well during the ten days he was under observation, and seven months later he wrote saying he was still very well and continuing to take digitalis.

Analysis of Tracings.

All the tracings given belong to the same kind of abnormal heart action. Those in Cases 3 and 4 show a well-marked auricular beat occurring at regular intervals, while the radial pulse is extremely varied in its rate and character. The irregular actions of the heart in all four cases belong to that group where the ventricle is the seat of disturbance. This can be inferred not only from the character of the tracings given here, but also from the electrocardiograms which have been taken from similar cases. I had an electrocardiogram taken of another case, and it showed that the beats during the irregular period had the character peculiar to ventricular extrasystoles.

In some tracings the irregularity has a superficial resemblance to that of auricular fibrillation (Figs. 5 and 6). During the abnormal periods in these cases, however, the ventricular beats are often quite regular (Fig. 2), whereas in auricular fibrillation, unless the heart is slow, there is a continual variation in the rhythm. Moreover, the electrocardiogram of auricular fibrillation shows the ventricular complex to be normal in its character, indicating that the stimulus for the ventricular contraction comes from the auricle, while the ventricular complex during the abnormal rhythm in these cases correspond with that of a ventricular contraction arising in the ventricle itself, so that these cases belong to a group where the abnormal rhythm is ventricular in origin.

Heart Failure.

These four cases are of further interest as showing the signs characteristic of heart failure. Heart failure cannot be detected by examination of the heart itself, but only by the effects of impaired supply of blood upon the other organs of the body. Dropsy and enlarged liver—sometimes spoken of as the cardinal signs of heart failure—only occur in relatively few cases: the vast majority of people who suffer from heart failure never show these signs.

The best method, in fact the only method for obtaining a knowledge of the heart's efficiency in a person who is able to get about, is by appreciation of response to effort. This knowledge can be obtained not by any form of exercise in the doctor's consulting room, but by eliciting a clear account of the manner in which the patient responds to those efforts made in his daily life where the circumstances cannot be imitated by any artificial method, such as the sensations experienced on walking up a hill, or on walking after a full meal or in the cold air. When there is impaired efficiency of the heart these experiences give rise to certain very definite sensations, and these sensations

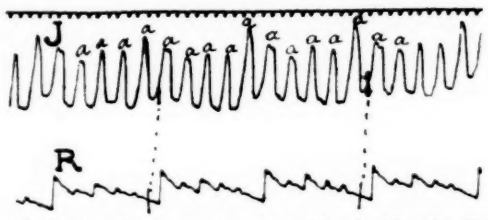

FIG. 1.—Part of simultaneous tracings of jugular (J) and radial (R) pulses, slightly reduced. The waves (*aa*) in jugular tracing are due to the contraction of the right auricle, and are quite regular, in contrast to the irregular rhythm shown in the radial tracing. The radial beats occur in groups of five, the first of which is a normal beat and arises in response to an auricular contraction, while the other four beats arise in the ventricle, independent of the auricular beats, and at a slightly more rapid rate. The characters of this irregularity are better brought out in Fig. 2.

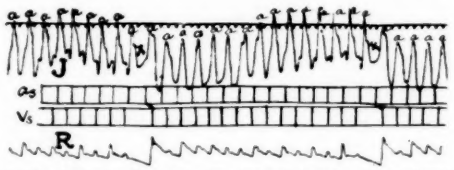

FIG. 2.—Part of simultaneous tracings of jugular (J) and radial (R) pulses reduced to ⅔. The waves (*aa*) in the jugular tracings are due to the contraction of the right auricle, and are quite regular in contrast to the irregular rhythm of the radial pulse. The radial beats occur in groups. In Fig. 1 the groups were of five beats; in other instances they were 19, 13, and 15, as in this tracing. The first beat of the group is a normal beat in response to an auricular systole. In the intercalated diagram the downstrokes, As, represent the auricular waves in the jugular, while the downstrokes, Vs, represent the radial pulse (ventricular systoles). The space between represents the passage of the stimulus from auricle to ventricle, and it is shown this only occurs with the first beat of the group, all the other radial beats (ventricular systoles) being independent of the auricular systoles. At the end of each group there is a pause before the appearance of the normal ventricular contraction. It is interesting to note the appearance of the pulsus alternans. The beat after the first large beat of the group is always small, then the alternation is at first slight but becomes more marked towards the end of the group. There is no very clear evidence showing that the ventricular rhythm had any effect on the auricle, although there is a suspicion of a lengthening of the pause at ×, between the beats that precede the beginning of a group. Moreover, as soon as the abnormal rhythm ceased the auricular rate fell from 130 (as in this tracing) to 120, as in Fig. 3, suggesting that the auricle was affected.

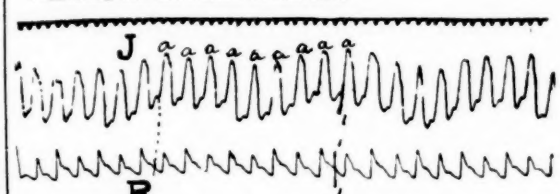

FIG. 3.—Simultaneous tracings of jugular (J) and radial (R) pulses, taken three minutes after Fig. 2. The radial pulse is now regular in time, and each beat is preceded by an auricular systole, showing that the rhythm is now normal. The rate is 120 per minute. The radial pulse shows the pulsus alternans—the rhythm being quite regular, while a large beat alternates with a smaller.

* I am indebted to Dr. R. L. Girdwood for most of the notes and records of the effect of the drug in this case.

are of the nature of disturbed reflexes. Thus the vast majority of people whose heart's efficiency is impaired suffer at times from one of two kinds of sensation, breathlessness or pain, with their accompanying sensations. In breathlessness the respiratory reflex is disturbed, and in pain the viscero-sensory reflex peculiar to the heart is disturbed.

It is unnecessary to dwell upon breathlessness as an evidence of heart failure, although the exact portion of the reflex arc disturbed is still far from clear. The disturbance of this reflex is not direct from the heart, but because the heart fails to supply the respiratory system with the normal kind of blood.

The nature of the reflex which gives rise to pain can be inferred by the situation of the pain, its peculiar distribution, and the phenomena which accompany it. I need not go into this matter more fully here beyond stating that the group of symptoms which accompanies the pain are the result of a stimulus arising from the heart muscle. The researches which we have been carrying on for some time show that there is a definite

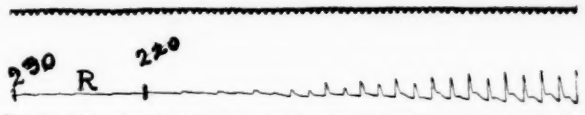

FIG. 4.—Part of tracing of the radial pulse (slightly reduced) while the blood pressure was being taken. The cuff embracing the upper arm was distended till the pressure was over 230 mm. Hg and the radial pulse was recorded. The air was allowed to escape and so the pressure within the cuff fell, the radial pulse gradually appeared—first the big beats, at 230, and the smaller beats at 220. This method brings out the distinctive features of the pulsus alternans.

series of phenomena provoked by muscular fatigue, and the principle governing the appearance of these phenomena are the same for the heart as for other muscular organs.

In the cases described we find present one or both of these phenomena, breathlessness and pain. In the young woman (Case 1) there was breathlessness only, and also in Case 2 breathlessness was the only sign. In Case 4 there was both breathlessness and pain, and in Case 3 pain was the dominant symptom. In the vast majority of people in whom pain occurs it only takes place when the heart is called upon to make an effort; in Cases 3 and 4 pain occurred without effort, manifestly because the abnormal rhythm itself was an embarrassment to the heart in its work. In the case of the young woman the abnormal rhythm embarrassed the heart, for she could take effort without distress when free from the abnormal rhythm, but was easily rendered breathless when it was present. Pain in Cases 3 and 4 was of that dull prolonged kind, different from the pain of angina pectoris, when it occurs in definite attacks and subsides on the cessation of effort. In some respects the pain is like that which is occasionally present in auricular fibrillation. In this condition attacks of angina pectoris rarely occur. Patients who may have suffered from attacks of angina pectoris when the rhythm was normal become free from them when auricular fibrillation appears. One reason for this fact is that whereas effort provokes pain in patients with a normal rhythm; during auricular fibrillation, breathlessness occurs so readily that they are pulled up from this

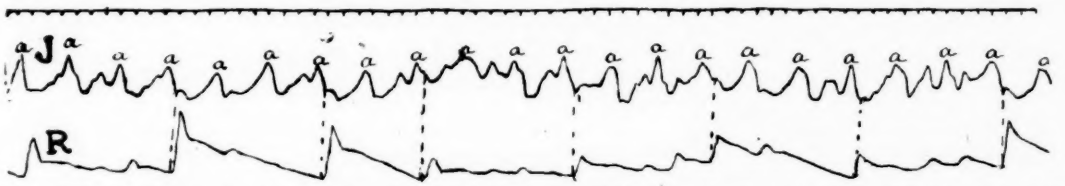

FIG. 5.—Part of simultaneous tracings of jugular (J) and radial (R) pulses, slightly reduced. Shows a very disorderly irregularity of the radial pulse, while the auricle (waves *a*) is regular auricular rate 90 per minute. The large beats in the radial are due to ventricular contraction arising in the normal manner—i.e., as a result of a stimulus from the auricle. The smaller beats are idio-ventricular beats, arising in the ventricle. There is a tendency for the ventricular beats to occur in groups. (May 26th, 1920.)

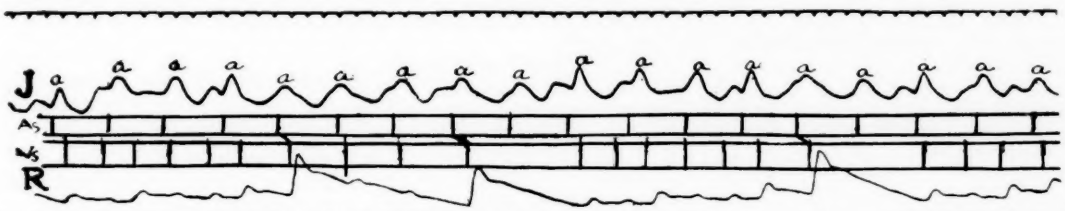

FIG. 6.—Simultaneous tracings, slightly reduced. Shows the same as Fig. 5; the tendency to form groups is more marked though the beats vary in number. Auricular rate 86 per minute.

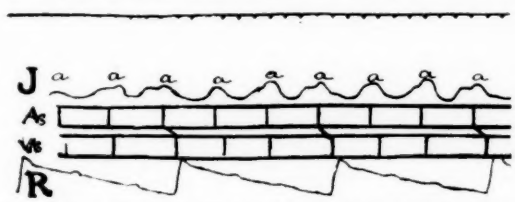

FIG. 7.—Part of simultaneous tracings (slightly reduced), taken at the same examination as Figs. 5 and 6, and showing regular groups consisting of one normal beat followed by two extrasystoles, the auricular rhythm being unaffected. In the intercalated diagram the downstrokes in the upper spaces, As, represent the auricular systoles (waves *a* in the jugular tracing), and in lower space, Vs, the downstrokes represent the ventricular systoles—represented by the radial beats. The space between represents the passage of the stimulus from auricle to ventricle, and it is shown only to occur with the large radial beats—the smaller beats occurring independent of the auricular contraction. The auricular rate is 88 per minute. (May 26th, 1920.)

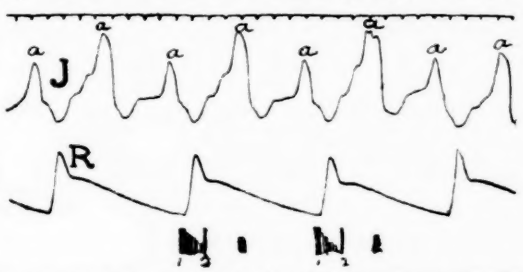

FIG. 8.—Part of simultaneous tracings (slightly reduced), after the administration of two drachms of tincture of digitalis. The auricular waves *a* in the jugular are 72 per minute, while the radial pulse is 36. During the pause in the radial pulse an extrasystole occurred, so weak that it is not shown in the radial tracing. On auscultation a single sound was heard during the pause which is shown diagrammatically under the radial tracing. The auricular waves during the pause in the radial beat are larger than the one which preceded the radial beat. The reason for this is that at the time the auricle contracted the ventricle was in systole, so that the contents of the auricle could not be emptied into the ventricle, but are forced back in the jugular.

cause. Nevertheless, in some cases, particularly where the heart is persistently rapid, pain of considerable severity may be felt across the chest, and it may disappear when the heart becomes slow under the influence of digitalis.

THEORY OF DISTURBED REFLEXES APPLIED TO THE ACTION OF DRUGS.

The theory of disturbed reflexes throws a new and unexpected light upon the action of digitalis and other cardiac drugs. It had been recognised for over 100 years that digitalis at times caused great slowing of the heart's action; consequently, the drug was supposed to be indicated whenever there was an increase in the heart's rate. It was found, however, that the slowing only occurred in a few cases. An inquiry into this difference enabled me to point out in 1906 that this slowing only occurred in people with an abnormal rhythm, particularly in those conditions which we now recognise as auricular fibrillation and auricular flutter. Although these observations have been fully confirmed, no clear understanding of the reason could be given. We are now able to give the explanation. In the vast majority of people who have a rapid action of the heart there is present some disease which produces agents that act upon the cardiac reflexes. Thus, in febrile states, such as pneumonia, influenza, and measles, the heart is usually rapid, sometimes very rapid, because of the action of the toxins of those diseases upon some portion of the cardiac reflex. When digitalis is given in such cases no effect is produced because the reflex is already poisoned by an agent which the digitalis is unable to overcome. The rapid pulse in auricular fibrillation and in the idio-ventricular rhythm described in this paper is due to a totally different cause. In auricular fibrillation it is the shower of weak stimuli from the fibrillating auricle which causes the increased ventricular rate. While in this form of independent ventricular rhythm which we are discussing the increased rate is due to some agent in the ventricle itself quite apart from the reflex. The digitalis, therefore, is acting in these cases upon a reflex not disturbed by any other toxic agent.

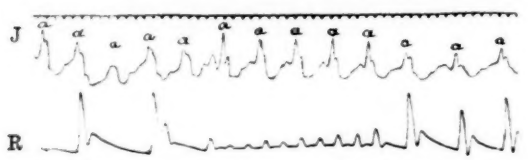

FIG. 9.—Part of simultaneous tracings (slightly reduced), taken four days after the stoppage of digitalis; the patient's condition became worse and the pulse became rapid and extremely irregular, with periods of rapid ventricular beats. Auricular rate 74. (June 7th, 1920.)

It is known that a stimulation of the vagus has a distinct effect in dulling the auriculo-ventricular conducting system, and it is probably on this account that digitalis slows the heart in auricular fibrillation. But this is not the explanation which causes the slowing in this ventricular tachycardia. The researches of Gaskell[3] show that the stimulation of the vagus has a very definite influence upon the various functions of the heart muscle fibres, and it is probable that the digitalis effect in Case 4 was due to some such action. It is to be noted that the slowing of the heart was more rapidly produced in Case 4 than in auricular fibrillation. It takes from 4 to 7 drachms to get a definite effect in auricular fibrillation—the patient taking 1 drachm per day. In this patient the effect seemed to be produced after 2 drachms. Support of this view is found in the absence of effect on the auricle. The auricular rate fell from 86 to 72 on first taking digitalis. The auricular rate did not rise above 72 when the digitalis was stopped while the ventricular rate increased. The resumption of the digitalis speedily affected the ventricle but did not affect the auricular rate (see Figs. 5, 6, and 7). I recognise, however, that more observations will have to be made before this susceptibility is proved. There is a point of resemblance in the recovery from heart failure between auricular fibrillation and this ventricular rhythm in that the diminution of the ventricular rate seems the chief agent in restoring the heart's efficiency, more time being given after each systole for recovery.

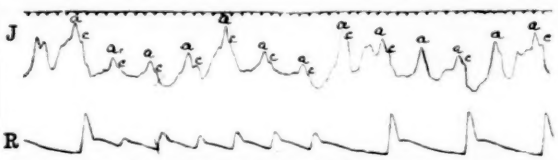

FIG. 10.—Part of simultaneous tracings (slightly reduced), taken four days after resuming the digitalis; the series of small ventricular beats had ceased, though the rhythm was still irregular. This tracing shows a group of normal beats, and periods when the radial pulse had only half the frequency of the auricular rate, as in Fig. 8, and for the same reason. Auricular rate 74 per minute. (June 12th, 1920.)

Sutherland[4] has shown that certain hearts with a rapid rate and the normal rhythm are susceptible to digitalis. This observation does not invalidate the view expressed here; it merely shows that there are agents which increase the heart's rate and which the digitalis can overcome.

PROGNOSIS.

In the investigation to which I refer in the introduction I spoke of the principles which guided me in detecting the mechanism by which symptoms are produced. Another matter absolutely essential to intelligent practice had to be considered—namely, what happens to the patient who shows an abnormal sign. This matter of prognosis is one that has been greatly neglected. While investigation into the various forms of cardiac irregularity has added greatly to our knowledge, such knowledge can only become of real practical use if it is supplemented by the knowledge of what effect the cause of these irregularities has upon the heart's efficiency. The great question, therefore, in every case is, Does this sign indicate heart failure or does it foreshadow its oncoming? It has been rather hastily assumed that this kind of knowledge was so easily acquired that no special steps should be taken to find it out. In reality it is a subject of very great difficulty, and requires a particular method of observation which very few people have undertaken. To begin with, to be able to undertake an inquiry into prognosis it is necessary to have a knowledge of the symptoms of heart failure; and so far very little has been done to discover what these are, for a great many signs which have no relation to heart failure have been mistaken for signs which gave that knowledge.

An investigation into this subject has revealed the fact that no physical sign or peculiarity of the heart

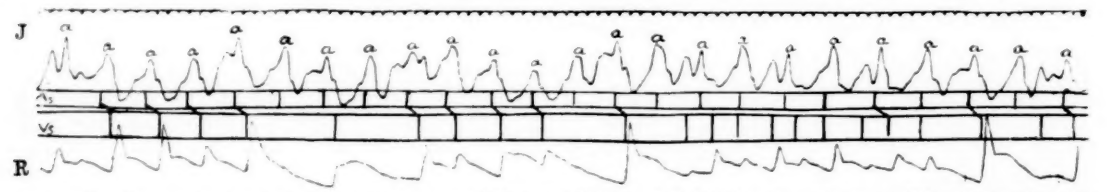

FIG. 11.—Simultaneous tracings (reduced to ⅔) taken on the fifth day of digitalis administration, the patient's condition still showing signs of improvement. The tracing represents a period of great irregularity, which the intercalated diagram shows are due to the erratic appearance of ventricular extrasystoles. Auricular rate 72 per minute. (June 15th, 1920.)

itself can ever give the information as to its functional efficiency. The presence of some cardiac signs may be recognised as associated with heart failure, but they themselves are not signs of heart failure, so that one can say that no single abnormal sign is of itself a basis for prognosis.

Many years ago, on looking up my cases of pulsus alternans, I found that they had all died, and the question arose, Was this a sign of grave moment? A prolonged investigation revealed that when it was of grave prognostic significance there was always a great limitation of response to effort. It was occasionally present when not associated with any form of heart failure, as in certain forms of paroxysmal tachycardia, or when an individual had suffered severe pain such as hepatic colic. On the other hand, when this sign is present and indicates a grave prognosis, it is invariably accompanied by a great limitation of the person's response to effort, that is, effort evokes sensations of breathlessness or pain with great facility.

The reason that I have quoted the first case is to show that this ventricular rhythm may be present and the patient be in no danger, while its presence in Cases 3 and 4 shows that while it may embarrass the heart it is not of itself necessarily a serious sign—that is to say, the heart muscle itself was manifestly impaired, and the presence of this abnormal rhythm further embarrassed the heart in its work. The presence of pulsus alternans in Case 3 was of grave significance, but there was present such a degree of functional inefficiency that the slight embarrassment induced by this abnormal rhythm immediately caused great suffering, and the outcome of the case justified the view that the patient's condition was a grave one.

References.

1. Mackenzie, Sir J.: The Theory of Disturbed Reflexes in the Production of Symptoms of Disease, Brit. Med. Jour., 1921, i., p. 147.
2. Ditto: The Study of the Pulse, &c., Edinburgh, 1902, Figs. 84-88.
3. Gaskell, W. H.: The Contraction of Cardiac Muscle, Text-book of Physiology, edited by E. A. Schäfer, 1900.
4. Sutherland, G. A.: The Therapeutic Action of Digitalis in the Rapid Regular Rheumatic Heart, Quart. Jour. Medicine, vol. xii., No. 47, 1919.

MEDICO-MILITARY TRAINING.

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IN introducing the subject of the best form of instruction for medical students to fit them to take their part in case of national emergency, I would first postulate that the Officers' Training Corps, which has fully established itself and is completely organised, should be accepted as the organisation under whose ægis the training should be carried out. Its machinery is complete and it has come to stay. *The* national emergency is, of course, war, but there are many minor emergencies which may be encountered, even in the course of civilian private practice, in which a training calculated primarily to make a medical practitioner fit for field service as an army medical officer will be found of value, particularly to a medical man who enters any form of State medical service. Secondly, the training must be carried out in the leisure time of the student. The present medical curriculum, calculated to make a student efficient in carrying out duties to the sick in civil life, is sufficiently intense and exacting to make it unfeasible to add compulsory auxiliary subjects to those considered essential. Thus the training must be voluntary. It takes up time which the less patriotic or provident student devotes to games. Therefore the instruction should be as recreational as possible, and calculated for the mental enlargement as well as the physical culture of the student. It should be adapted to serve him in whatever course he adopts, as far as is compatible with its main object.

Origin of the Officers' Training Corps.

The medical units, Officers' Training Corps, form one of the branches of the senior division of that body, of a specialist type. For the information of those who have not been brought into touch with the subject of the Officers' Training Corps it may be well to state shortly its nature and functions.

It was formed in 1908 during the Secretaryship of State of Lord Haldane by a committee of school and university teachers, under the chairmanship and guidance of Sir Edward Ward, then Permanent Under Secretary of State for War, with the object of giving a standardised measure of training in military matters to students at schools and universities such as would fit them to become officers of the army, S.R.O., and T.F. It absorbed existing volunteer corps at schools and universities and consists of junior and senior divisions—the junior division at public and other large schools, the senior division at universities (and the Inns of Court). The officers in the junior division are schoolmasters, in the senior division members of university staffs, and both are on the Unattached List of the Territorial Force.

In the junior division, with the exception of two schools, where some engineer work is taught, infantry training alone is given. In the senior division, although infantry training is their staple, units of cavalry, artillery, engineers, signals, R.A.S.C., R.A.M.C., R.A.V.C. are formed and the special duties of these branches are taught in units of the contingent, of the formation of corresponding units in the army. The training is carried out under the general supervision of chief of the Imperial general staff, by the officers of the several contingents in term time and in annual camps. Adjutants who are attached to the general staff are appointed from the Regular army to contingents, and N.C.O. instructors are supplied. Equipment, arms, and uniform are also found by the public in kind or from grants. Cadets serve under a contract with their universities; they are not subject to military law, and enrolment is voluntary.

The affairs of university contingents are administered by a military education committee of the university where they exist, and the War Office assists the committee as necessary in carrying out their work. A certain minimum number of instructional parades are necessary to qualify for efficiency. Annual camps are held, and the training is made as practical as possible to fit the cadet for war service conditions. Certificates are obtained by examination.

One year of training is the minimum to admit a cadet to sit for Certificate "A," and two years for Certificate "B." Only Certificate "A" is obtainable in the junior division; both "A" and "B" are obtainable in the senior division. The possession of these certificates gives the holder certain definite privileges if he should choose the military career.

But the real value of the organisation is that it disseminates military knowledge among a large body of the class of men who are best fitted to hold commissions, and prepares them to take their places as officers in time of emergency, with a minimum of preliminary instruction. The Officers' Training Corps comprises a very large body. Twenty-one contingents exist in the senior division, and 162 in the junior division. The value of the training was fully proved in the war. Had it not been for the Officers' Training Corps output it would have been impossible to supply the army with junior officers. It is not too much to say that it saved the situation at the beginning of the war.

The Medical Units of the O.T.C.

These units have been formed of medical students, as units of the senior division contingents, with a view to training them for the Military Medical Services. The training unit is a section of a field ambulance, that being the war unit which gives the best opportunity of visualising the functions of the medical service in the field. Such units have been formed at the Universities of London, Cambridge, Oxford, Dublin, Belfast, Edinburgh, Aberdeen, and Glasgow, at which centres the larger medical schools are located. It is hoped that other units may be formed at other medical schools, but this cannot be sanctioned at the present crisis in national financial affairs.

Before proceeding with details I may state that some 5000 medical students were trained prior to the war in these medical units. A proportion of them took commissions in the Special Reserve and Territorial Force. The remainder, all such as were qualified, served in the capacity of medical officers in the navy or army, and the value of their O.T.C. training was testified to both by the officers whose commands they joined, and under whom they served, and by themselves. The value to the army of this body of trained medical officers was immense; and here I would insist that it is not enough

for a medical man, in order to develop his full usefulness in the Army Medical Service, for him to be in possession of a medical qualification, and to have added a measure of military science, whether during a course at a training centre or in another arm of the Officers' Training Corps than his own. It is true that a knowledge of discipline and leading, and the action of other arms in addition to his medical qualification, will make some sort of an army medical officer, but it is not quite to the point, because the Army Medical Service is a highly specialised branch of the medical profession, and although its primary function is to aid the fighting power of the army by keeping the largest possible number of soldiers fit to fight, yet its essential aims are of a conservative kind, whereas in the fighting branches they are all destructive. The two points of view are essentially opposed to each other and the training shapes the mind to one or other aim. Moreover, it is a waste of time and money to train a cadet whose services would be certainly best, and perhaps only, used in war in the medical service, in the work of a fighting arm, and vitiates his point of view. There is enough of important military medical knowledge to be acquired with advantage throughout the whole of a medical cadet's training in a medical unit to take him all his training period to assimilate. This work has a direct bearing on his duties as an army medical officer. It is such as is not acquired during his purely medical curriculum, though much of it would aid him in his civil practice, such as sanitary and administrative work. And the method of its conveyance is far superior to that of a condensed course such as that undergone at a training centre, as it is spread over a longer period and given in assimilable doses.

There is another most important advantage in the existence of a medical unit at a university which is that it keeps the Army Medical Service in the eye of the public of the university. The Army Medical Service in time of peace is a body little known to such public, and from time to time good students have not only not been encouraged to join but actually discouraged by their teachers from doing so. The late war has been responsible for bringing the work of the corps to the knowledge of the medical profession, and there exists a very large body of medical men who have been trained in war and who may be counted as available for service in case of emergency for a few years. But the Officers' Training Corps is for the purpose of training the young men during their university education, and is a provident institution. It is the only piece of mechanism in this country that provides a reserve of potential medical officers for the army, and for this reason alone it deserves all the encouragement it can get.

Course of Training.

The course of training, as has been said, is shaped to fit the medical student on his becoming qualified to undertake the duties of a junior officer of the Army Medical Service in the field, with the least expense of time, or even with no preliminary training at a centre, and to make him as nearly as is possible in the time equal in essential matters belonging to war conditions to the young medical officer of the Royal Army Medical Corps. He cannot, naturally, have an equal knowledge of hygiene, tropical diseases, drill, discipline, interior economy, &c., in which the Royal Army Medical Corps lieutenant has had a six months' course at Aldershot and the Royal Army Medical College, and to which all his time has been devoted, but he will have gained enough to enable him to grasp the ideas underlying his work, its general direction, and many of its necessary details.

The course given to enable the cadet to enter for Certificate "B" lasts for at least two years; for Certificate "A" one year. During the first year, before he has entered upon the professional subjects of the medical curriculum, such as surgery and medicine, he is taught the military part of his duties and a certain amount of elementary sanitary work, and such portions of the work of a medical officer as do not involve the knowledge of his medical specialty. The cadet of the infantry is at this time learning to be a platoon leader, and the medical cadet acquires such knowledge of squad and company drill and ambulance drill, map-reading, and elementary military law as will make him efficient in the matter of leading and commanding the men who will be committed to his charge in parallel with him.

He also learns bandaging and the application of splints and tourniquets, field dressings, the contents of the medical panniers, means for the purification of water for the troops, tent pitching, field cooking, and the construction of extemporised structures used in camp sanitary conservancy, in which particulars he has to instruct his men. During the annual camp he puts them into practice. He receives instruction in the outlines of army and army medical organisation by lecture, in order that he may appreciate his particular sphere of activity and his responsibilities as an army medical officer. He has to attend a fixed number of instructional parades and the annual camp to attain to being "efficient." He supplements such instruction by a study of certain text-books of regulations.

Before sitting for Certificate "B" he undergoes a second year at least of Officers' Training Corps teaching of a kind which involves some knowledge of medicine, surgery, and hygiene, and medico-military details to a more particularised extent. This is intended to fit him to act as a medical officer in charge of a unit other than medical, and as a junior officer of a medical field unit. It involves training in organisation and administration, a knowledge of the structure and functions of medical units, military law, hygiene, including prophylaxis against diseases of armies, and methods of disinfection of buildings and clothes, and of water purification, personal hygiene and prevention of disease, under which come various agencies in the causation of disease, methods of disinfection and sterilisation and disinfestation in the field, sanitary survey of places frequented or used by troops, means of transport of sick and wounded, improvisations to supplement existing conveyances, the medical aspect of marches, quarters, movements of troops by rail and sea, and housing, feeding, and clothing of troops.

Opportunities for physical training exist in contingents and cadets are encouraged to learn to ride where there are facilities for it. Instructional stores are provided at contingent headquarters, being specimens of the vehicles, tentage, and ordnance, and medical stores of a field ambulance, for use in demonstration and practice during term-time. In the annual camp, which the cadet attends for eight days at least, the unit obtains from the command in which the camp is held vehicles and horses and stores to make it up to the establishment, and it is exercised on a scheme devised to demonstrate its working under war conditions. During term-time, when possible, tactical schemes may be carried out to illustrate the interworking of the unit with other units and arms.

Objects of Medical Cadet Training.

The whole training is designed to give the cadet a comprehensive outline of the work of any army medical officer in war, with as much useful detail as possible, and to enable him to instruct his subordinates. He must know enough of discipline and procedure to relieve him from embarrassment on entering his new sphere and to develop his full usefulness, enough of drill to enable him to move his men correctly and give him confidence, and enough of interior economy to enable him to deal with matters concerning the comfort and well-being of his men and patients.

The advantages of such training are, from the point of view of the State, considerable, in that it provides a reserve of potential medical officers possessing an amount of knowledge of the duties they would have to perform in war adequate to make them of the fullest value from the time of their joining, and this is fully realised. The advantages to the cadet are also considerable: he acquires, at no expense to himself, except that of some of his leisure time, an insight into subjects which in the event of his joining a State Medical Service are of supreme value, and, should he take up private practice, will fill gaps in his ordinary curriculum and be found very useful.

These are: a practical view of elementary hygiene which makes a good groundwork for its more intimate study; practice in first-aid methods and in the transport of sick and wounded and in improvisation in this connexion; organisation and methods of administration which enable him to deal with masses, as in railway accidents, mine disasters, &c., and to conduct his affairs with method; discipline, which will serve him in all the amenities of life and in dealing with subordinates. Map-reading is an accomplishment of practical use in everyday life, and its application to

surveying and inspection will be found very useful by a medical officer of health. Drill and ambulance drill put him in the way to direct his assistants in the carrying out of any combined operation, such as the placing a patient upon a stretcher or in a vehicle. In addition to these pieces of knowledge the cadet gets an annual airing in camp at no expense to himself, which is most beneficial to his health. He is a member of a corporate body within the university, and his social relations with his comrades are of the most pleasant and healthy kind. To the university in whose Officers' Training Corps contingent he serves the organisation is of value in the fact that it has a body of students bound together by the ties of discipline and comradeship, who are working with a high aim for the welfare of the State, and who set the best kind of tone in the university, and influence others by their example. In a non-resident university this is particularly valuable. The training fosters habits of punctuality and the realisation of duty and responsibility.

War Record of the Medical Units.

The war record of the medical units is a very fine one and has amply established the value of the organisation and training. Unfortunately records are not complete, but of a body representing about a quarter of the whole number of medical officers of all services and categories who trained in these units—Royal Naval Medical Service, Royal Army Medical Corps, Special Reserve of Officers, Territorial Force, and temporarily commissioned officers—1178 in number, whose records have been obtained, 95 gave their lives, 176 were decorated, and 114 mentioned in despatches, a testimony to their devotion and efficiency and an example to the rising generation of students.

Their Present Position.

At the present time the senior division of the Officers' Training Corps, and particularly the medical units, are at a low ebb. For this there are several reasons:—

(1) A general feeling of war weariness and an idea fostered by the hope that there will be no more war in the near future.

(2) The fact that most of the present generation of medical students have served and do not feel disposed to give their leisure time to further military training under peace conditions. This reacts upon the younger men who were not of military age during the war.

(3) Certain very acute grievances which affected those former cadets who had taken commissions in the Special Reserve of Officers and Territorial Force during their war service. Of these grievances, the most poignant was (*a*) the better rates of pay accorded to medical men who took temporary commissions at consolidated rates of pay—24*s.*—the Special Reserve of Officers and Territorial Force officers only getting 20*s.* at the maximum, inclusive of their allowances which they dropped when on leave or in hospital; others were (*b*) the reluctance experienced in the granting of temporary rank to Special Reserve of Officers and Territorial Force officers, as compared with temporary officers, owing to the fact that seniority lists in the Special Reserve of Officers and Territorial Force were adhered to and were of a permanent nature, whereas on demobilisation temporary officers would be clear of the military establishment; (*c*) the ignoring of the previous training of Officers' Training Corps cadets on posting, due to the anxiety and hurry of mobilisation.

(4) During the war it was compulsory upon all students who were held to continue their studies, or who were physically of low category and for these reasons not called to the colours, to join the Officers' Training Corps. This brought a number of reluctant men into the medical units. The reversion to the voluntary system was the signal for these men to break away.

(5) The fact that those who had had their studies interrupted during the war felt it necessary to give the whole of their time to professional work and to make up the time lost in preparing themselves to earn their livelihood in civil life.

(6) A doubt as to whether it is worth while, and a question as to the tangible advantages to be drawn from the training.

Measures Enacted to Remedy Grievances.

The remediable causes of disinclination have after representation been remedied, and the following measures enacted:—

(1) In future all commissions will be in the Special Reserve of Officers or Territorial Army; this abolishes the giving of temporary commissions carrying higher rates of pay, and avoids the setting up of a standard of comparison which was so unfavourable to Special Reserve of Officers and Territorial Force Officers under former conditions.

(2) Six months' seniority will be given to officers who on joining the Special Reserve of Officers and Territorial Army possess Officers' Training Corps Medical Certificate "B," and three months to holders of Certificate "A."

(3) A credit of 6 per cent. of marks to holders of Medical Certificate "B" and 3 per cent. to holders of Medical Certificate "A" will be accorded at the entrance examination to candidates for Royal Navy Medical Service and Royal Army Medical Corps.

(4) Preference in the matter of posting and promotion will be given to officers in possession of Officers' Training Corps certificates over those who have not trained who apply for service in the medical branch of the army. Card records of the Officers' Training Corps services of medical cadets are now kept by the D.G.A.M.S. for reference.

The other causes of reluctance should in time cure themselves, provided always that encouragement at the medical schools is given to students to undergo their training.

THE TREATMENT OF INFECTIOUS DISEASES BY LEUCOCYTOLYSIS

PRODUCED BY RONTGENISATION OF THE SPLEEN.

BY IVAN I. MANOUKHIN, M.D.

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IN my thesis "On Leucocytolysis" (Petrograd, 1911) I proved by direct experiments that an organism combats infection mainly by means of the breaking-up of its leucocytes. If in many acute infectious diseases there is an increase in the number of leucocytes in the blood, I regard this phenomenon as preparatory to their subsequent breaking-up. The organism can only cure itself when the specific anti-substances produced by the leucocytes have come out from them and filled the blood plasma, as a result of leucocytolysis. This process is produced in the blood by special soluble ferments entering into it, which I proposed to call "leucocytolysins," and leucocytosis, in those cases when it precedes leucocytolysis, is produced by soluble ferments, whose properties are opposed to those of the leucocytolysins, and which I proposed to call "anti-leucocytolysins."

Later on I succeeded in proving that leucocytolysins are produced by the spleen, and anti-leucocytolysins by the liver.[1]

From that moment it became possible to verify the correctness of the above theory in practice, and in 1913 in Professor Metchnikoff's laboratory at the Pasteur Institute in Paris I carried out with this purpose the following experiments. I infected with human tuberculosis monkeys (*Macacus cynomologus* and *rhesus*) and guinea-pigs, which are very susceptible to tuberculosis, and I stimulated artificially in them the activity of the spleen so that leucocytolysins should appear in the blood and that the leucocytolysis caused by them should exercise its curative effect. The stimulation of the activity of the spleen was carried out by radiating the organ with small doses of Rontgen rays. On this method, which is now being widely applied to men, I shall dwell in more detail as follows.

Method of Radiation.

The human spleen is radiated by a dose of X rays equal to 1 h., as measured by the Sabouraud and Noiré radiometer, using the Holtzknecht scale. In the case of weak patients a smaller dose is given. The rays are filtered through 1 mm. of aluminium. I obtain this dose during five minutes at 1 ma. and 5–7 a. with X rays whose hardness is 8 on Benoist's radiochromometer and 10 on Wehnelt's criptometer (but the hardness of the rays and duration of radiation are varied in relation to the gravity of the case), and with the anticathode at a distance of 25 cm. from the body. The spleen of monkeys and guinea-pigs is radiated with

[1] Archives des Maladies du Cœur et du Sang, No. 2, 1913; and Comptes Rendus Hebdom. des Séances de la Société de Biologie, 1912, p. 686.

a somewhat smaller dose and with softer X rays, so that the rontgenisation lasts usually for about ten minutes. The dose and the duration of the rontgenisation is fixed separately for each species of animal, according to the extent of the leucocytolysis occurring in the blood. As the liver and the spleen secrete antagonistic ferments it is very important that the Rontgen rays should not fall on the liver while radiating the spleen. Therefore, for instance, in the case of humans, the radiation of the spleen is done exclusively from the front or back, but never from the side; and, to avoid radiating the liver, when the spleen is being radiating from in front, the right boundary of the tube (8 cm. diameter), which does not let the X rays pass through its sides, must be to the left of the left mammary line, and during rontgenisation from the back it must be to the left of the left scapular line.

Experiments on Animals.

The results of the rontgenisation of the spleen of monkeys and guinea-pigs have proved that leucocytolysis plays an important rôle in the cure of infectious disease.[2] In order to formulate a theory of the significance of the leucocytolysis in the cure of infectious disease I carried out other experiments in Professor Metchnikoff's laboratory, and afterwards in Russia. It appears that rontgenisation of the spleen increases the proportion of alexin and the following specific anti-substances in the blood: hæmolysins, agglutinins, bacteriolysins, and opsonins.[3]

Again, working with Professor Besredka in Metchnikoff's laboratory on guinea-pigs inoculated with human tuberculosis, I tested the blood by the Bordet-Gengou reaction with the tuberculin of Besredka, and at the same time investigated the leucocytolytic properties of the blood. I convinced myself that the curve of fluctuation of specific anti-substances in the blood, revealed by the Bordet-Gengou reaction, was in full correspondence with the curve of fluctuation of the leucocytolysins in it.[4]

Applications of Knowledge Gained by Animal Experiments.

The results of these experiments on animals gave a perfect ground for passing to the application of the method of rontgenisation of the spleen of men for curative purposes.

Pulmonary tuberculosis.—I made my first observations in 1913 on patients suffering from tuberculosis of the lungs in Professor Vaquez's department in the St. Antoine Hospital, Paris.[5] Since that time during seven years I have evolved the application of my method of treatment, not only to tuberculosis, but to a series of infectious diseases.

Typhoid.—During the war, being at the head of a Red Cross hospital for infectious diseases in Kiev, I first tested the curative rôle of rontgenisation of the spleen in cases of typhoid. In the war-time setting the disease gave a very high mortality, being complicated in 40 per cent. of the cases by pneumonia, and it often took a septic course caused by various micro-organisms. Rontgenisation of the spleen reduced the mortality from typhoid to half. But as this method could only enable the organism to combat the bacteriæmia of the blood I attempted to increase the effect by introducing various anti-substances, which reached the blood as a result of rontgenisation of the spleen, into the affected sections of the intestines and their content. With this purpose I supplemented the rontgenisation of the spleen with the feeding of the patients with an autoserum obtained from their blood taken from them 8–10 minutes after the rontgenisation. The autoserum was administered in gelatin capsules. By this means I succeeded in reducing the mortality from typhoid 7½ times. Out of 225 patients not treated by my method 43 died—i.e., the mortality was 19·1 per cent. Out of 351 patients treated by radiation of the spleen alone 34 died—i.e., the mortality was 9·7 per cent. Out of 305 patients treated by radiation of the spleen and by feeding on the autoserum 8 died—i.e., the mortality was reduced to 2·6 per cent.

Tetanus.—After this our hospital had to extend wide medical help to patients suffering from tetanus. The majority were of short incubation period (mostly 5–8 days), which, even with a serum treatment, gave a mortality of 92–98 per cent. After some preliminary tests I established the following treatment for tetanus cases: to each patient, three times a day, 20 c.cm. of serum (prepared by Parke, Davis and Co., or by the Copenhagen Institute, or by ourselves at the Kiev Bacteriological Institute) was introduced under the skin, and 10 c.cm. of one of the above sera was injected intrathecally, together with 10 c.cm. of autoserum obtained from blood taken from the patient 8–10 minutes after rontgenisation of the spleen. Under this treatment the following figures, which are exceptional for war-time, were obtained: of 132 patients 36 died—i.e., the mortality was only 27·3 per cent. and the percentage of recovery 72·7 per cent.

It should be noted that in this case the rontgenisation of the spleen, besides immunising the body to the toxin of tetanus, removed the effect of the serum anaphylaxis. I had already proved in Metchnikoff's laboratory that in the origin of anaphylaxis the anti-leucocytolysins of the liver play an important part: and these, under rontgenisation of the spleen will be neutralised by the leucocytolysins.

Preparation of Curative Sera.

I also availed myself very widely of the rontgenisation of the spleen for the preparation of curative sera. Alongside with the immunisation of horses against the toxin of tetanus (and later also in cases of immunisation of horses against *B. typhosus*, *B. dysenteriæ*, and *Vibrio choleræ asiaticæ*) a rontgenisation of their spleen was performed. Thus I obtained curative sera of high concentration in a shorter time, and was able more readily to meet the great demand for them during war-time and considerably to cheapen the cost. For instance, I prepared the antitetanus serum, containing 2000 American units in 10 c.cm.—i.e., equal to the serum of Parke, Davis and Co. supplied to us at that time, ready for distribution in ampoules in three months.

Other infectious diseases.—I shall not dwell on such acute infectious diseases as acute bronchitis, pneumonia, pleurisy, typhus recurrens, the special "Carpathian" typhus, acute arthritic rheumatism, and acute malaria. They progress very satisfactorily under the influence of one rontgenisation of the spleen of the patients. As to the membranous inflammation of the lungs, I showed that favourable results were obtained by rontgenisation of the spleen before the war in the Maryinsky hospital for the poor in Petrograd.

Dysentery.—In the case of dysentery, which, in our hospital was more often of the Flexner type, and rarely of the Shiga-Kruse type, the progress of the disease was especially favourably influenced by introductions of autoserum, taken 5–10 minutes after radiation of the spleen, into the large intestine through a long syringe.

Non-infectious diseases.—Of non-infectious diseases the following are successfully treated by rontgenisation of the spleen: Bronchial asthma, owing to the connexion between anaphylaxis, which forms the basis of asthma, and the anti-leucocytolysins of the liver, referred to above; hepatitis and cholangitis, since in their case the irritation of the liver is also accompanied by an accumulation of anti-leucocytolysins in the blood; and hæmophilia.[6]

Treatment of Tuberculosis.

I have published in various places in Russia details of the treatment of infectious and non-infectious diseases by rontgenisation of the spleen, and shall conclude this brief exposition by an account of the cure of tuberculosis of various organs.

[2] For further details of these experiments see my communication to the Société de Biologie, June 14th, 1913.

[3] Comptes Rendus Hebdom. des Séances de la Société de Biologie, 1913, p. 1221; also Russky Vratch, 1916.

[4] Russky Vratch, 1916.

[5] Published in La Semaine Médicale, May 21st, 1913.

[6] A communication by the writer on this subject appeared in La Semaine Médicale, May 21st, 1913.

Pulmonary tuberculosis.—For the last seven years I have personally treated 8000 cases of tuberculosis, mostly of the lungs, in Russia. I purposely treated them in the most unfavourable climatic conditions—in Petrograd—so that there should be no doubt that the climate played no part in the cure. I only demanded from my patients increased nourishment, so that there should be no lack of building material for the production of leucocytes and various specific anti-substances (whose formation was greatly accelerated by the rontgenisation), and rest during the day of rontgenisation, asking them to remain in bed until 12 A.M. on the day following if possible. During the last two years my patients could not keep even these conditions: they had to be employed to obtain food, and spent much energy in walking to get their very insufficient ration and in doing all sorts of unwonted work. Owing to this the treatment was protracted, but nevertheless even under these circumstances I obtained results which fully justified the method.

In tuberculosis of the lungs radiation is performed not oftener than once a week, and in cases of tuberculosis of the kidneys, bladder, sexual organs, lymphatic glands, or bones once in five days. In Petrograd the treatment of tuberculosis of the lungs of the first stage requires 8–10 seances, of the second stage 12–15, and of the third stage two series of 12–15 each, with an interval between of two or three months. In general I never give more than 15 seances at one stretch.

When the first stage of tuberculosis is treated in this way the temperature (which often rises a trifle after the first seances) falls to normal, coughing decreases, and the patient rapidly gains weight. Of the objective signs the harsh breath-sounds disappear, and the bronchial glands, which are usually swollen, are reduced. When the second stage is treated at first the disease becomes slightly worse. After this the details of recovery vary in different patients, but in the majority of cases, during the second half of the treatment the tubercle bacilli in the sputum decrease and finally disappear. The hæmorrhages cease, if there have been any, the sweats cease, and the patient gradually gains weight. The objective signs become worse at the beginning of the treatment; moist rales appear in abundance in the affected regions, and in places where auscultation has not revealed them before, and the only evidence of disease has been that revealed by X ray examination. After this the moist rales gradually decrease and completely disappear, giving place to symptoms of the ensuing cicatrisation of the tuberculous process.

The third stage responds to treatment like the second stage; its treatment is prolonged according to the size of the cavities present. Radiograms of the lungs taken before and after the seances have plainly showed their cicatrisation towards the end of the treatment. Thus the actual affection of the lungs with the tuberculous process is not in itself a contra-indication of the treatment by rontgenisation of the spleen. This treatment is only inapplicable in cases of extreme exhaustion, accompanied by a vigorous intoxicative affection of the blood-forming apparatus. Again, the treatment is unfavourably influenced by any change of the spleen pulp, for obvious reasons: for instance, patients who suffered from a lingering chronic malaria, with a large and firm spleen, do not react at all to the treatment.

Tuberculosis of kidneys and bladder.—Tuberculosis of the kidneys and bladder usually progresses very satisfactorily under the influence of only 15 seances of rontgenisation of the spleen. At first the tubercle bacilli and blood disappear from the urine, then the temperature, which had risen at the beginning of the treatment as in tuberculosis of the lungs, falls; the pains cease, and finally the urine is gradually cleared of leucocytes.

Tuberculosis of lymphatic glands.—Tuberculosis of the lymphatic glands is also quite successfully treated, usually in 15 seances. In cases where the tuberculous lymphadenitis has led to suppuration of the gland, the abscess is opened surgically, the suppurative secretion gradually diminishes, the infiltration disappears, and the fistula rapidly closes over with a soft cicatrice.

Tuberculosis of bones.—Tuberculosis of the bones also requires about 15 seances. In cases with fistulas the secretion at first increases, then, after 5–7 seances it gradually begins to diminish, the infiltration disappears, the pains cease, and the fistula closes over.

Tuberculous peritonitis.—This condition forms no exception in the general successful progress of this treatment of tuberculous processes.

Tuberculous meningitis.—Only acute tuberculous meningitis does not yield to this treatment. In one case I tried to supplement the treatment by intrathecal injections of autoserum from the blood of the patient, taken after rontgenisation of the spleen. But the injections were made too late. Perhaps, as in tetanus, the application of autoserum from the very first days of the disease will make even these cases yield to treatment.

In better climatic conditions the treatment of tuberculous patients progresses still quicker than in Petrograd. Thus, I had to treat two cases of tuberculosis of the lungs in Naples; the patients lived in Sorrento. The second stage was over after four seances: the first after two. The successful application of the method of treatment proposed by me to various forms of infectious diseases shows that its theoretical foundation is correct. Indeed, the constancy of the results of the application of rontgenisation of the spleen to different infections can only be explained on the theory that it brings in nothing new, but only strengthens the defensive mechanisms organised by Nature.

"It is in this way," as I said in one of my previous articles,[7] "that the organism can avail itself most extensively of the substances present in the leucocytes, for not only do we vigorously destroy the latter, but we also, through this destruction, stimulate the blood-forming organs to an increased production of new leucocytes which will go on breaking up in the blood," saturating the blood-plasm with specific anti-substances which are necessary for the struggle with bacteria and their poisons.

Even from this very concise exposition of the large supply of material at my disposal I think one may convince oneself that, in leucocytolysis, produced by radiating the spleen with a stimulating dose of Rontgen rays, we have acquired a sure method of governing the blood reaction of the organism. We can, therefore, at any moment give radical help to man struggling with various infections.

NOTES OF A TYPHOID CARRIER CASE.*

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THE death occurred in 1914 of a woman who had long been known as a typhoid carrier and to have infected at least 10 persons who lodged with her. The case has been mentioned frequently by Dr. J. Niven, M.O.H., Manchester, in his annual reports to the Manchester Health Committee. A short record of her history may be of interest, as the case had been under observation for several years, and many samples of the excreta had been examined at the Public Health Laboratory of the University of Manchester. Moreover, the woman was under treatment for several weeks at Monsall Fever Hospital, and was again admitted there before her death from malignant disease of the stomach and pancreas, and Dr. Fletcher was able to make a post-mortem examination.

In the autumn of 1907 the attention of Dr. Niven was drawn to the connexion of Mrs. W. with cases of typhoid fever. Inspector Hewitt was instructed to inquire closely into her history, and he presented a report, of which the following is a summary:—

"Mrs. W., aged 54, had good health till 1893, when she had an illness said to be influenza, with headache, pains in back and limbs, delirium, and great sickness. She was for

[7] La Semaine Médicale, 1913, p. 241.

* This report was prepared in the autumn of 1914, but on account of the war was not published.

five weeks in a union hospital. Her health after this was good till 1898, since when she has had periodic attacks of great abdominal pain, with vomiting and blood-coloured urine."

Cases of typhoid continued to occur in Mrs. W.'s house, and there was barely a year without an infection. Her husband died in 1906, aged 64. He is stated to have had sickness and diarrhœa and an abscess on the side, but it was evidently not considered typhoid. In 1912 she was treated at home with salol and urotropin with a view to free the excreta from the typhoid bacillus, but without success. In January, 1913, she was admitted to Monsall Fever Hospital and treated with an autogenous typhoid vaccine prepared at the Public Health Laboratory. After several weeks' treatment examination of excreta at the hospital gave negative results, and she was discharged April, 1913. One month later the typhoid bacillus was again present in the fæces, but not in the urine, and another case of typhoid occurred in her house the same year.

The Manchester Health Committee then resolved to give her a pension on condition that she took no more lodgers. She began about this time to show signs of malignant disease, and died in Monsall Fever Hospital, May, 1914. The blood was tested on two occasions at the Public Health Laboratory for the Widal reaction: in November, 1907, it was negative, but a year later it was positive, and when patient was in Monsall Hospital, 1913, it was positive.

Table I. shows cases of typhoid which occurred in Mrs. W.'s house from 1898–1913.

TABLE I.

No.	Date.	Patient	Age.	Result of Widal test.	
1	October, 1893.	W. D.	25	+	Death.
2	April, 1905.	A. B.	25	+	—
3	May, 1905.	H. R.	19	+	—
4	,, 1906.	A. W.	28	+	Death.
5	September, 1906.	A. A.	28	+	,,
6	,, 1907.	J. W. E.	19	—*	,,
7	,, 1908.	J. H. W.	36	+	—
8	,, 1910.	Servant.	14	+	—
9	,, 1912.	Young man.	—	—*	—
10†	,, 1913.	Male.	64	—*	—

—* No record of Widal test.
† After Mrs. W.'s return from Monsall Hospital.

For a satisfactory examination of the fæces for presence of the typhoid bacillus, &c., it is advisable to give the patient a sufficient amount of sulphate of soda to secure a good fluid evacuation. This is more likely to clear the upper part of the bowel, where the typhoid bacillus exists in greater numbers, and thus renders its detection easier. This method was introduced by Professor S. Delépine many years ago. On arrival at the laboratory successive dilutions are made of the fluid stool and surface cultures are made on litmus lactose agar culture set in Petri capsules. Sometimes the bacillus is found at once in large numbers, but if it cannot be found at the first attempt it is advisable to make several plates from the most suitable dilution. The small blue colonies (non-lactose fermenting) are picked out, subcultured and tested. The urine is centrifugalised and the sediment treated in the same way.

Post-Mortem Bacteriological Examination.

After Mrs. W.'s death at Monsall Fever Hospital, the spleen, liver, kidneys, and mesenteric glands were sent to the Public Health Laboratory for bacteriological examination. Cultures made from the liver, spleen, kidneys, and glands showed a large growth of the *B. coli* only, but it should be remarked that the organs arrived 48 hours after death. In the gall-bladder there was a fair-sized gall-stone of cylindrical shape; this was cut in half and cultures made from the interior. Numerous colonies of the typhoid bacillus was found, as well as a bacillus of the Gaertner group. The typhoid bacillus was also recovered from the bile, but with some difficulty, as it appeared to be growing in symbiosis with a Gaertner bacillus; one distinct colony contained both bacilli.

TABLE II.—*Summary of Examinations of Mrs. W.'s Excreta at the Public Health Laboratory.*

Date.	Specimen.	Result.	Remarks.
Nov. 12th, 1908.	Fæces.	+	Nearly pure growth.
	Urine.	+	—
Dec. 3rd, 1908.	Fæces.	+	—
	Urine.	—	Very scanty growth.
	,,	—	No growth.
Jan. 25th, 1909.	Fæces.	+	In very small numbers.
	Urine.	+	
April 4th, 1912.	Fæces.	+	Nearly pure growth.
	Urine.	+	Very numerous colonies.
Jan. 18th, 1913.	Fæces.	+	Nearly pure growth.
	Urine.	+	do. (vaccine prepared).
May 1st, 1913.	Fæces.	+	Found after repeated examination.
	Urine.	—	Bacillus resembling typhoid, but with no specific agglutination.
May 23rd, 1913.	Fæces.	+	Numerous.
	Urine.	—	—
April 3rd, 1914.	Fæces.	+	Numerous.
	Urine.	+	

Between Jan. 18th and May 1st, 1913, patient was in Monsall Hospital.

Some Further Notes from Various Sources.

A number of specimens of clothing, &c., were collected from Mrs. W., and were examined at the Public Health Laboratory by Dr. Sheila M. Ross, who has kindly given me permission to publish the results. The specimens were: washing from hands; scraping of nails; saliva; clothing—apron, blouse, chemise, drawers. No typhoid bacilli were obtained from any of these, though a bacillus was obtained from the underclothing which in some respects resembled the typhoid bacillus. The *B. coli* was obtained from the underclothing.

Dr. Barbara Cunningham (then assistant M.O.H. for Manchester) has kindly given me some further notes on the case. She says:—

"Mrs. W. was a woman of clean and refined habits. She was distressed at being considered a source of infection, and gave us every assistance in the investigations. She was never found wearing soiled linen. She was usually constipated, and had periodic recourse to salts to secure an evacuation of the bowel. When at stool she was, owing to her rheumatism, unable to use sanitary paper, but made use of long strips of linen."

Notes from Monsall Hospital.—Dr. Fletcher, at that time medical superintendent, has kindly sent some notes on the case.

Mrs. W. was admitted to Monsall Hospital, Feb. 8th, 1913. The general condition was good and the spleen not palpable. The Widal reaction was positive; the typhoid bacillus was found in fæces and urine from Feb. 14th to April 2nd. An autogenous vaccine was given. The first dose was 100 millions, and it was gradually increased to 1000 millions; there was little or no reaction after inoculations. The only medicinal treatment adopted was helmitol gr. 10 t.d.s. from March 14th to April 12th.

After the beginning of the vaccine treatment bacteriological examination of the fæces and urine were made at the hospital with the following results:—

Date.	Fæces.	Urine.
March 3rd	—	+
April 1st	—	+
,, 3rd	—	—
,, 12th	—	—
,, 27th	—	—

The patient was discharged April 27th, 1913. On May 18th, 1914, the patient was readmitted in a very emaciated condition, with a history of hæmatemesis and incontinence of fæces and urine. She became rapidly worse and died on May 26th, 1914.

Post mortem.—A columnar-celled carcinoma was found involving the pancreas and cardiac end of stomach, with secondary deposits in mesenteric glands. The gall-bladder contained several calculi. On bacteriological examination the typhoid bacillus was found in the gall-bladder but not in the spleen.

Remarks.

Mrs. W. may be regarded as a typical example of a chronic carrier, as opposed to the temporary case, where the bacilli persist for a limited period only after the disease. It is not clear whether the bacilli were present continuously or intermittently. Though they were always found in the examinations here during a

period of six years, yet the specimens were mainly sent after the infecting of the various lodgers.

One point of interest is the clear connexion of the gall-bladder with the condition: there were numerous attacks of cholecystitis and biliary colic, and it is possible that these attacks caused a fresh discharge of bacilli into the intestine, then at the post-mortem examination gall-stones were present and the typhoid bacillus was obtained from the bile and from the interior of a gall-stone. Typhoid bacilli were found in the bile as long ago as 1888; and in 1899 Droba was the first to isolate them from the interior of a gall-stone. Some years ago I examined a number of gall-stones in association with Dr. E. M. Brockbank, and in almost every instance a bacillus of the Gaertner group was obtained from the interior, usually in pure culture. It is probable that some bacterium is always the centre of the crystallisation of the gall-stone.

Dr. Fletcher makes no mention of any ulceration of the intestine, so we may accept the gall-bladder as the source of the bacilli found in the fæces; but what of their presence in the urine? Ledingham, in a long report to the Local Government Board,[2] states that in chronic typhoid carriers he never finds the bacilli in the urine of a male, and only occasionally in the female, and he believes it is always due to external contamination and is not found in a catheter specimen.

In the above recorded examination, while the bacillus was always present in the stools, it was found in the urine in 55 per cent. of specimens. In Monsall Hospital the bacillus was found in the urine on two occasions when it was not found in the fæces. My view is that although it may reach the bladder by external contamination it multiplies there, and is frequently present in enormous numbers. During the vaccine treatment, it appeared to persist longer in the urine than in the fæces. It will be noticed that the patient underwent treatment by various drugs, and had a full course of vaccine treatment at Monsall Hospital, an autogenous vaccine being used. The vaccine treatment appeared to be of temporary benefit, but within two months of leaving the hospital she had infected another lodger, and the bacillus was isolated from the fæces. Ledingham[1] states that the only permanent cures on record have been due to surgical treatment of the gall-bladder.

In this case the Widal reaction was negative at one time, but on two other occasions it was positive. Ledingham[1] finds in the numerous cases he has collected that the reaction was positive in about 70 per cent., but there is little evidence as to variation of the reaction.

As to the public health aspect of the case, it is evident there should be some compulsory powers to prevent a typhoid carrier from taking up any occupation in regard to preparing or serving food or drink of any kind.

My thanks are due to Professor Delépine for kind advice; to Dr. Niven and Dr. Cunningham, of the Manchester Health Office; Dr. Fletcher, of Monsall Hospital; and Dr. Ross, of this laboratory, for their kindness in permitting me to make use of their reports and notes.

[2] L.G.B. Reports, 1908–9.

WELSH NATIONAL MEMORIAL.—The quarterly meetings of the National Memorial (Tuberculosis) Association, held at Shrewsbury on March 18th and 19th, were of unusual interest, in that the newly appointed chief medical officer, Professor Lyle Cummins, met the committees for the first time. The future medical work of the association, which controls over 1000 beds in 18 institutions, in addition to tuberculosis dispensaries, was carefully considered and planned, and the way in which it will be coördinated with organised research set on foot by the Medical Research Council was explained. Both the medical staff and the medical committee felt that the future of the work had better prospects ahead than has been the case since the war interfered with progress. Various appointments were announced, including that of Sir Robert Philip as honorary consulting physician, Mr. W. Thelwall Thomas as consulting surgeon, and Sir Henry Gauvain and Major Alwyn Smith as consulting physicians.

VASCULAR CHANGE DURING UTERINE INVOLUTION:

A STUDY OF THE CONDITION OF THE ARTERIES IN A UTERUS REMOVED 24 DAYS AFTER DELIVERY.[1]

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DURING the past 70 years many observers have made a close study of the histological changes that occur in the uterine vessels in the course of normal involution of the uterus after labour. It would seem that after so much inquiry there can hardly be any aspect of the subject in dispute or new observation to be made. In recent years a very complete research into this subject has been carried out by Dr. James Goodall, and both on account of its intrinsic merit and the fact of its being quoted at length in Eden and Lockyer's "New System of Gynæcology" it may be accepted as the standard work on the vascular changes that take place in uterine involution. The present communication deals with a single aspect of this subject—namely, the presence or absence of fatty degeneration in the muscle fibres of the arteries of the uterus undergoing involution.

The majority of past observers have found that fatty degeneration does occur both in the muscle fibres of the uterus and the muscle fibres of its vessels. In fact, there is no need to make any distinction in dealing with this subject between the muscle fibres in the two tissues, because there is no record of fatty degeneration occurring in the one group of muscle fibres while absent at the same time in the other group; the converse also holds good. Some have noted the appearance of fatty degeneration at an earlier stage in the puerperium than have others, but there has been little difference of opinion as to the fact of its occurrence. Goodall agrees with the majority of past observers and notes the presence of fatty degeneration in the muscle fibres of the uterus and arteries of the uterus, and states that "the muscle cells of the parent media undergo fatty degeneration at an early stage in the process of involution."

Description of the Case.

Dr. H. Williamson has kindly given me the opportunity of preparing specimens from a uterus removed at operation 24 days after delivery of a dead fœtus.

The case was that of a patient, aged 41, admitted to St. Bartholomew's Hospital under Dr. Williamson on Sept. 6th, 1919, on account of bleeding from the uterus and 25 weeks gravid. She was found to have a carcinoma of the cervix which extended up to, but did not involve, the posterior vaginal wall. The patient had had eight children, with straightforward labours and no miscarriages. The menstrual history was normal. The present pregnancy was normal until the onset of bleeding in April. On Sept. 17th, under general anæsthesia, the membranes were ruptured and abortion induced. At 2 A.M. on the 20th—that is, in the twenty-seventh week of the pregnancy—abortion took place. The fœtus was born dead, but not macerated. On Oct. 14th, 24 days after the delivery of the dead fœtus, Wertheim's hysterectomy was performed and the uterus removed.

The organ was placed in formol-saline, and at a later date parts of it were removed for section. The separate parts were embedded in gelatin according to Dr. J. F. Gaskell's method and cut frozen. Sections were stained in Sudan III. and acid hæmalum, others in Van Gieson and acid hæmalum, and others in Weigert's elastica and eosin. The advantages of the gelatin method of embedding are that the tissue is not raised to a higher temperature than 37° C., and is not brought into contact with xylol; as a result the cells retain their normal form more nearly, and any fat present is not dissolved out of the tissues.

The sections thus prepared show the usual changes in the vessel walls characteristic of normal arterial involution. The most striking changes occur in the

[1] A paper read at the Section of Obstetrics and Gynæcology of the Royal Society of Medicine on March 3rd, 1921.

intima; there is a cellular proliferation and hyaline swelling of the subendothelial layer, together with a swelling and splitting of the internal elastic lamina. In the media there is the appearance of a granular atrophy of the muscle fibres and a hyaline swelling of the intermuscular connective-tissue fibrils.

Remarks.

The picture has been often described and does not require detailed notice; in fact, the only point to which I would draw attention is the absence of any sign of fatty degeneration either in the medial coats of the vessels or in the muscle fibres of the uterus. The histological picture of the vessels in this specimen are in all respects comparable to the changes seen in the involution of the hypogastric and umbilical vessels after birth. I have examined many specimens of these vessels up to two years after birth and have not observed fatty degeneration occurring in the media in any vessel. Neither does fatty degeneration occur in the involution of arteries after ligature or thrombosis, nor in the normal involution of the ductus arteriosus; in fact, so far as I am aware fatty degeneration is not a normal feature of arterial involution. It would appear that it is only in uterine involution that fatty degeneration occurs in vessels undergoing this physiological change. The absence of fatty degeneration in my specimen is therefore in accord with the general observations on the changes that take place in arterial involution, and it further establishes the fact that fatty degeneration need not of necessity occur in uterine involution.

The presence or absence of fatty degeneration in uterine involution is a matter of importance to a proper understanding of the processes involved in the varied arterial lesions described under the term of "arteriosclerosis." Thus Thoma maintained that slowing of the blood stream was a dominant factor in the production of arteriosclerosis, and he based his theory largely on the change occurring in the iliac and hypogastric arteries of newly born infants. Thoma's theory of arteriosclerosis is chiefly concerned with the process of involution. The weightiest single piece of evidence against this hypothesis is the characteristic presence of fatty degeneration in the histological picture of arteriosclerosis and its absence in normal involution. But this distinction will fail if it is established beyond doubt that fatty degeneration occurs in the media of arteries undergoing involution in the puerperal uterus. I do not feel that it is expanding the subject too far in applying the observations on arterial changes in uterine involution to the wider subject of arteriosclerosis, because Goodall follows his observations to the same goal, and in discussing their bearing on arteriosclerosis he concludes by stating that his work seems to prove that both Jores and Thoma are right in their views as to the nature of the processes underlying the production of arteriosclerosis.

A Critical Examination of Current Views.

It is difficult to dismiss the work of past observers who have found that fatty degeneration always occurs in uterine involution, and at the same time in their writings there is not, in general, sufficient detailed information given to allow of adequate criticism of their material or methods. As regards my own specimen it may be objected at once that the pregnancy had not gone to full term and that the organ was in a condition of subinvolution. This criticism is fair, and one of my objects in bringing this matter forward is the hope that it may lead to my having better material to examine on a future occasion. The criticism, however, loses some force in that fatty degeneration is absent in my specimen; had it been present it might have been ascribed to subinvolution, but subinvolution cannot account for its absence. In the second place the criticism fails to an extent because the material of those who have found fatty degeneration in the muscle fibres of involuting uteri is also abnormal. I have not read any account of arterial changes in human uterine involution which avoid this criticism.

It would take too long to justify this statement in detail, but to illustrate my meaning I will take Dr. Goodall's research. It is based on the examination of 80 uteri, but the observations on the subject of the changes that occur in the puerperal uterus are based on only six cases. Goodall states that five of these showed subinvolution; in the sixth there was a morbid lesion, which one would expect to interfere with the process of normal involution.

It is a mistake to regard Goodall's observations as a record of the changes that occur in normal uterine involution, for he states on p. 61 of his monograph that "all the chronic inflammatory diseases, blood dyscrasias, ... and possibly malignant growths modify the normal complete involution." As there is no doubt as to the truth of this statement it is fair to assume that any unexpected histological features presented by uteri taken from cases in which any of these conditions were present are capable of explanation in terms of a pathological process rather than in terms of the physiological process involution. Further, in the six cases on which Goodall based his observations the cause of death was in all cases due to a disease which might in itself have caused both vascular disease and fatty degeneration in muscle fibres. Thus Case 1 died of "eclampsia, associated with, or caused by, a very grave chronic parenchymatous nephritis." Case 2 died of "syphilitic arteritis of the brain." Case 3 died of "septicæmia, secondary to an abscess of the breast with subinvolution." Cases 4 and 5 died of tuberculosis of the lungs, while Case 6 died of "acute yellow atrophy of the liver, chronic parenchymatous nephritis, and broncho-phthisis incipiens." An interesting comment is made on this case, for the author writes: "Hence it is seen why Case 6, who had had chronic Bright's disease, followed by acute yellow atrophy of the liver, should present such intense degree of incomplete oxidation of tissue," and in another paragraph that "such cases must be looked upon as abnormal." It is obvious that the author recognised his material as being pathological, and he cannot be blamed for his work being mistaken for an account of the changes that occur in normal involution. When a condition of suboxidation exists fatty degeneration may be expected to occur, and therefore before it is established that fatty degeneration is a part of the normal process of uterine involution it must be found to occur in a uterus taken from a healthy subject. Further, as regards the presence of fatty degeneration in the media of the vessels, it must be proved that the other vessels in the body are normal in order to exclude the possibility of the local vascular fatty degeneration being part of a diffuse vascular disease. This last condition will be fulfilled, in my opinion, if the intimate vasculature of the spleen and kidney are found to be normal, because I have found that diffuse vascular disease tends to have its chief incidence on these two organs.

Conclusion.

It must necessarily be difficult to obtain material from the human subject which will satisfy these conditions, and in the meantime we must rely on observations made on uterine involution as it occurs in animals.

Such observations have been made on rabbits.

Broers found that fatty degeneration occurred in the muscle fibres of the uterus between the third and thirtieth day of the puerperium; no reference was made to its presence or absence in the media of the vessels. Helme made similar observations on 10 rabbits, and since his work was primarily directed to this question it is of particular importance. He thus states the object of his research: "The prime question that presents itself is: Does a degeneration of muscle cells occur?" His answer is: "I have been unable to find a single muscle cell whose substance gave the characteristic appearances and reactions of fat," and later he speaks of the occurrence of a gradual diminution of the volume of the muscle cells of the media, "just as in the muscle cells of the uterine wall."

Too close a parallel cannot be drawn between the changes that occur in uterine involution in animals and those that occur in the human subject. There is also a conflict of observation. I think, however, that the conclusion is justified that the question of the presence or absence of fatty degeneration in the media of the vessels in the puerperal uterus is not as yet definitely settled.

References.—1. Goodall, James: Studies from the Royal Victoria Hospital, Montreal, vol. ii., No. 3, Gynæcology. 2. Eden and Lockyer: New System of Gynæcology, 1917, ii., 130. 3. Gaskell, J. F.: Jour. Path. Bact., 1912, July, 58. 4. Broers, C. W.: Virchow's Arch., 1895, cxli., 72. 5. Helme, A.: Trans. Roy. Soc. Edin., 1887, xxxv., Part 2.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

TWO CASES OF PERINEPHRIC ABSCESS.

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With a Note by

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THE following two cases of perinephric abscess, admitted under the care of Dr. Wilfred Harris (to whose courtesy I am indebted for permission to publish these notes) at St. Mary's Hospital, Paddington, and operated on within 24 hours of each other, present certain features of interest:—

CASE 1.—A. M., male, aged 41, admitted Jan. 8th. Sent by a doctor who wrote that he had first seen patient on Dec. 14th, 1920. At that time patient complained of great pain in left lumbar region radiating forwards towards the left groin. Temp. 103° F. This condition continued on and off till Dec. 28th, when pain shifted upwards over base of left lung, where signs of pleurisy were noticed, and on Jan. 4th on exploration, a hæmorrhagic fluid was withdrawn. On the 6th a painful tender swelling appeared in the left lumbar region. Temp. 101°. Family history of T.B. On admission a further history was elicited of a boil in the neck which began during the last week in November, 1920. This was incised and drained, and as it cleared up early in December the patient first noticed a gnawing pain in left lumbar region which gradually became acute; on Dec. 14th he took to his bed.

Condition on admission.—Patient appeared wasted, toxic, and very weak; T. 102·4°, P. 120, R. 26, and very shallow. Signs of pleural effusion over left side reaching to axilla. The urine contained no pus or blood, and only a slight trace of albumin. A diagnosis of perinephric abscess with accompanying pleural effusion was made, and on Jan. 9th Mr. C. W. G. Bryan operated under local anæsthesia (novocaine), the patient's condition not warranting a general anæsthetic. He first removed by aspiration about 2 pints of hæmorrhagic fluid from the pleura, and then making an incision over the site of the abscess evacuated about 1½ pints of pus. A drainage-tube was inserted for four days, when the wound was allowed to heal. Temp. dropped to normal, and patient made an uninterrupted recovery with no further chest symptoms.

Pathological report.—(1) Pus: Direct film, many Gram-positive cocci, polymorphs and lymphocytes. Cultures: Many staphylococcus colonies. (2) Pleuritic fluid: Many cells, lymphocytes rather more numerous than polymorphs, no organisms seen. Cultures: No organisms grown. No T.B. found in either specimen.

CASE 2.—T. H., male, aged 50. Admitted Nov. 20th, 1920, for "gastritis" and wasting. He gave a history of boils in the anal region recurring from May till the end of August, 1920, when he had "influenza" with much vomiting followed by pneumonia and "gastritis." He was confined to bed, became much thinner, and continued to run a temperature until his admission to hospital. On admission he was obviously much wasted, seemed listless, T. 99·8°, P. 120, R. 26. Heart not enlarged, no murmurs audible. Other systems normal. Patient very constipated, carious teeth and pyorrhœa present. On Nov. 27th cultures of *Staphylococcus albus* were grown both from blood and urine. A blood count (Nov. 29th) showed: r.b.c., 4,000,000; Hb, 54 per cent.; colour index, 0·6; w.b.c., 24,000; polymorphs, 64 per cent.; small lymphocytes, 32·5 per cent.; large lymphocytes, 2·5 per cent.; large hyalines, 1 per cent.

The patient was treated with an autogenous vaccine without benefit, nor did improvement result from extraction of all his teeth. Temperature was of a septic type, fluctuating between 97·5° and 102·4°. Pulse-rate 100 to 120. Constipation remained obstinate from admission until Dec. 22nd, when an attack of diarrhœa supervened, lasting eight days. On Jan. 10th, for the first time, a small, fluctuant, painless swelling the size of a Tangerine orange was noticed in the right lumbar region about four inches to the right of the spine. This was only slightly tender on deep palpation. A blood count now showed: r.b.c., 4,000,000; Hb, 38 per cent.; colour index, 0·45; w.b.c., 18,000; polymorphs, 79 per cent.; small lymphocytes, 17 per cent.; large lymphocytes, 1 per cent.; large hyalines, 3 per cent. A perinephric abscess was diagnosed. The patient was operated on by Mr. C. A. Pannett and about a pint of pus evacuated. Temp. dropped to normal, drainage-tube was removed on the twelfth day, and patient was discharged from hospital Feb. 3rd.

Pathological report.—The pus removed from the perinephric abscess contained polynuclear cells and masses of Gram-positive cocci, presumably staphylococci. Cultures on blood-agar plates gave pure culture of a *Staphylococcus albus*.

Note by Dr. WILFRED HARRIS.

The coincidence of two cases with perinephric abscesses, secondary to boils, being met with so close together is unusual. Case 1 was admitted and operated on as an urgency after my house physician had made the diagnosis of perinephric abscess without my having seen it. Case 2 had been a puzzle to us for weeks. The patient was evidently suffering from septicæmia, and gave a blood culture of *Staphylococcus albus*, but I had examined the patient carefully for signs of suppuration on more than one occasion, nothing more blameworthy than pyorrhœa and carious teeth being found. Ulcerative endocarditis was considered as a possible explanation, though no bruit ever appeared. The man gradually wasted and weakened, and undoubtedly would have died had it not been that Miss Wilberforce in this case also discovered a swelling over the right loin.

A NOTE ON HERPES ZOSTER AND VARICELLA.

BY JAMES WATT, M.A., M.D. ABERD., D.P.H.,
MEDICAL SUPERINTENDENT, THE DOWNS SANATORIUM, SUTTON.

IN view of the controversy regarding the ætiological connexion of herpes zoster and chicken-pox, every case likely to afford any evidence of value ought to be reported.

P. R. M., male, aged 39, was admitted to the Downs Sanatorium on July 12th suffering from pulmonary tuberculosis, affecting both lungs, mainly the left, and complicated with chronic bronchitis. Tubercle bacilli were present in sputum. Temperature was normal till the 26th. On that and the two following days the morning temperature rose to 98·0° and 98·2° F., and evening to 99·2° and 99·4°. On July 29th, 30th, and 31st the level rose to 98·6° to 99° in the morning and 99·4° to 100·2° in the evening. Pulse-rate ranged between 80 and 92. On the 25th and following days patient complained of severe pain in left side and back, and on the 29th a typical herpes zoster appeared on the left side, the eruption being confluent and covering the left scapula below its spine, extending half an inch beyond its inner border. The following day another group of vesicles covering an area as large as a penny appeared in the middle of the left axilla, and a third area extended from outside the left nipple along the fourth and fifth interspaces below it. On August 1st a papular eruption appeared with the distribution of a small-pox rash, and the evening temperature rose to 101·4° F. The papules were profuse on the forehead and the rest of the face, scattered on the trunk, and sparse on the upper and lower limbs. On the 2nd many were vesicular and of diverse shape and size. Chicken-pox was diagnosed, and confirmed by Dr. W. Habgood, medical officer of health for Sutton, and later by Dr. F. M. Turner, of the South-Eastern Fever Hospital, to which the patient was transferred on August 2nd.

The sequel, however, raised a doubt. Dr. Turner has kindly sent the following further notes:—

On admission this man had obvious herpes zoster. The lesions were of very unusual size, but otherwise typical. In addition to the herpes lesions he showed numerous small pustules and scabs scattered over face, trunk, and limbs, suggestive of chicken-pox, and of no obvious distribution or arrangement. On August 17th he had a fresh outbreak of herpes along the third and fourth left intercostal spaces, the anterior axillary fold, and down the inner side of the left arm, with severe pain in all these regions. There were some herpetiform spots, also painful, on the right side of the chest between the anterior and posterior axillary lines. On the 20th there were herpetiform lesions over both sides of the chest, a few on the abdomen and on both upper arms. There was still considerable pain. Temperature did not exceed 99° F. Gradual subsidence then followed. In view of the distribution of the second rash, which at first simulated herpes zoster, but later was anomalous both for herpes and for chicken-pox, and in view of the rarity of relapse of chicken-pox, I began to doubt the evidence of chicken-pox in the first attack.

This man had been vaccinated in infancy, and when 9 years of age had been sent to hospital for small-pox. As he was sent home again within a fortnight, it probably turned out to be chicken-pox. Neither he nor any of his family had previously had herpes, nor had any of his six children had chicken-pox.

ROYAL MEDICAL BENEVOLENT FUND GUILD: BRISTOL BRANCH.—At a meeting held in the Council Chamber of the University, presided over by the Lord Mayor of Bristol, Mrs. Lauriston Shaw gave an interesting account of the work of the guild, chiefly on behalf of needy dependents of deceased medical men, work which is supplementary to that of the fund itself. She laid particular stress on the valuable assistance to the education of children of medical men, which the guild has been able to furnish, and made a number of suggestions as to methods of collecting funds. The meeting, which was well attended, was also addressed by the Lord Bishop of Bristol, the Master of the Society of Merchant Venturers, and Mrs. Hugh Stack, the secretary of the Bristol branch of the guild, a branch which is the fifth largest in the country, with 112 members.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

A MEETING of this section of the Royal Society of Medicine was held on March 22nd, Dr. A. F. VOELCKER, the President, being in the chair.

Dr. F. PARKES WEBER read a paper on

THROMBOSIS OF THE INFERIOR VENA CAVA,

in which he described the case of a patient who had been under his care with this condition plus thrombosis of both renal veins.

The patient was a man, aged 40, who had been admitted to hospital under the care of Dr. M. L. Schroeter in September, 1920. In the spring of 1919 he had suffered from a septic wound of the right hand. This was followed by an attack of thrombo-phlebitis in the left lower extremity, and at the same time a gradually increasing hydrocele on the left side was first observed probably (as was later seen) connected with venous obstruction from thrombo-phlebitis of the left pampiniform plexus. The right testis was undescended but could be palpated as a mass about as big as a large walnut on the right side of the lower front of the abdomen. The man had had gonorrhœa but never syphilis, and his Wassermann reaction had been found to be negative on three occasions. The urine was of rather low specific gravity, and contained a trace of albumin; no sugar. Otherwise nothing special was found on ordinary examination.

The hydrocele was operated upon at the end of the month. About two weeks later thrombo-phlebitis in the right internal saphenous vein was observed and was accompanied by slight pyrexia. Sodium citrate, 15 gr. three times daily, was prescribed and continued for three to four weeks and a diet containing sufficient green vegetables and fruit. The fever lasted about ten days. About a month later the superficial veins on the front of the abdomen were markedly dilated, more especially on the left side, and the circulation in them was from below upwards. There was slight œdema of the lower extremities. After about a fortnight there was thrombo-phlebitis in one of the superficial veins on the left front of the abdomen and a little temporary fever.

Early in December the patient was transferred to the medical side of the hospital under the care of Dr. Weber. For three days he had been passing very little urine. There was no definite ascites, but the abdomen was rather full (? venous engorgement). The daily quantity of urine was 200 c.cm., the specific gravity was 1012, acid, free from sugar, and practically free from albumin. The brachial systolic blood pressure was = 165 mm. Hg. There was considerable pain in the lumbo-sacral region for a week and much headache for a fortnight. For three days there was apparently anuria, which seemed clearly due to thrombotic obstruction in both renal veins. He was given two injections of urea (2 g. and 4·2 g.) subcutaneously on consecutive days and treated by hot hip baths for five days. The amount of urine passed increased gradually, was of low specific gravity, and contained a little albumin. There was occasionally a little vomiting and one short epileptiform attack.

About the middle of December the superficial veins of the collateral venous circulation on the trunk were becoming much more dilated. There was dullness to percussion at the base of the right lung, apparently due to pleural effusion, and afterwards a little dullness at the base of the left lung also. Ophthalmoscopic examination by Dr. C. Markus showed nothing definitely wrong in either fundus. The superficial veins over the back of the trunk became collaterally dilated as well as those on the front. At the present time the patient's condition was much as at the end of January. There had been three transitory epileptiform attacks, evidently not of uræmic origin. He was passing about 1450 c.cm. urine in the six hours, the specific gravity was about 1015, and there was a "cloud" of albumin and a few tube casts. There was still slight dullness at the base of both lungs behind.

In discussing the condition Dr. Weber said that, apart from thrombotic obstruction of the inferior vena cava connected with malignant tumour, thrombo-phlebitis might follow traumatism, some infection—such as typhoid fever, varicella, erysipelas, or, as in this case, a septic wound. In such cases the patient might recover and live for a long time, but not very much was known as to the exact subsequent history and the average duration of life. Sooner or later a special liability probably developed to attacks of thrombo-phlebitis in the enlarged (varicose) veins.

In 1907 he had seen a man, aged 26 years, whose inferior vena cava had become thrombosed seven years previously as a sequel to typhoid fever. The thrombosis was associated with the usual œdema of the legs and compensatory enlargement of superficial veins, which had reached their maximum six weeks after the first signs of thrombosis. Since then the man had had three attacks of thrombosis in the left lower extremity and had had varicose ulcers and pigmentation of the legs. Dr. Weber had heard that his condition in 1912 was much the same as in 1907.

Dr. J. L. Bunch had recorded a case of traumatic thrombosis of the inferior vena cava in a man aged 33, who, three years previously, after exertion in running, suffered from œdema of the legs, and developed collateral enlargement of the superficial veins of the abdomen and groin.

In 1903 Dr. Weber examined an active, fairly muscular, energetic man, aged 28½ years, for life assurance, in whom the superficial veins of the lower extremities and lower part of the trunk were greatly enlarged, doubtless resulting from traumatic thrombosis of the inferior vena cava. About five years previously, after a carriage accident, his lower limbs had become swollen, and the superficial veins of these limbs and of the lower part of the trunk began to enlarge. He had been kept in bed for five months. He was otherwise in good health, and his urine was free from albumin. His life was accepted for a whole-life policy, with 10 years extra, and in 1917 Dr. Weber ascertained that the insurance was still in force and the man was about to pay his last premium.

Dr. Weber then gave a short account of the case of the late Dr. W. Rivers Pollock, who suffered from thrombosis of the inferior vena cava at the age of about 24 years.

The whole history was published by Professor S. G. Shattock, because the patient himself had bequeathed the affected parts of his body for dissection to the Royal College of Surgeons. When the thrombosis occurred (1884) he was in perfect health and won the 120 yards hurdle race for Cambridge University against Oxford in the record time of 16 seconds, holding his breath through the whole race. Immediately after the race was over he lay on the grass, and within a few seconds complained of pain in the lumbar spinal region. He was kept in bed for six months. The œdema of his legs and lower part of the trunk which at once supervened was followed in a few days by progressive enlargement of the superficial veins. Albuminuria, which likewise appeared after the injury, persisted throughout his life. Death occurred 25 years later from tonsillitis and septicæmia. During the last six years of his life he had been subject to attacks of thrombo-phlebitis in the enlarged saphenous veins. Professor Shattock found that the inferior vena cava was converted into a flat impervious ribbon from the point of entry of the hepatic vein downwards; both right and left renal veins were closed at their entrance to the vena cava, so that the return of blood from the kidneys must have taken place through the veins of the capsules and thence by way of the lumbar veins through the azygos vessels. Professor Shattock argued that the thrombosis was probably secondary to the rupture of the inner coat of the vena cava caused by the violent strain of the race with the holding of the breath; he compared the venous condition in question (for which he suggested the name "dissecting varix") to the arterial condition known as "dissecting aneurysm" when, owing to some violent strain or previous disease, a rupture of the inner coat of the aorta had occurred.

The paper was discussed shortly by Sir HUMPHRY ROLLESTON.

A TUBERCULOSIS IMMUNISING VACCINE.

Dr. NATHAN RAW read a paper on this subject. He said that in spite of an enormous amount of research we had not yet obtained a specific remedy which would effectively destroy tubercle bacilli in the body. Therefore we had to rely on producing a sufficient immunity in the tissues to resist the attack of virulent tubercle bacilli. This immunity could be obtained (1) by increasing the natural resistance by means of increased nutrition and sound hygienic conditions, and (2) by producing an artificial active immunity in the tissues. At the annual meeting of the British Medical Association in 1903 he had expressed the opinion [1] that human and bovine tuberculosis were separate and distinct infections, producing a different set of symptoms in the human body. The lesions caused by the human bacillus (direct infection) were pulmonary tuberculosis, tuberculous laryngitis, secondary intestinal ulceration, and, in some cases, lupus. The lesions caused by the bovine bacillus, which were generally caused by infected milk in the early years of life, were tuberculous glands, mesenteric tuberculosis, surgical tuberculosis, bones and joints, &c. (frequently), tuberculous meningitis, and some cases of lupus. Dr. Raw said that not only did he still hold to this classification and differentiation, but he firmly believed that one form of tuberculosis conferred an immunity in the body to the other form—in fact, that the two varieties of bacilli would not exist together in the body at the same time.

After treating over 2000 cases of tuberculosis in hospital with Koch's tuberculins, prepared from virulent cultures, he had come to the conclusion that, although a certain amount of success was obtained, the results were not, on the whole, satisfactory. The uncertain action of the tuberculin and the alarming reactions sometimes produced were very disconcerting, and there was no doubt that in certain cases quiescent tubercle was stirred to acute activity. For this reason he came to the conclusion that it was essential to use cultures of very low virulence

[1] Proc. R.S.M., Sect. of Path., 1913, vi., p. 126. THE LANCET, 1903, ii., 473.

and to avoid, if possible, general febrile reactions. The only certain way of permanently attenuating virulent cultures of tubercle bacilli was long-continued and systematic subculturing spread over a number of years. In 1906 Professor Koch had given him a pure culture on glycerine agar of human bacilli from the sputum of an advanced case of pulmonary tuberculosis. Professor Calmette had supplied him with a pure culture of bovine tubercle bacilli from the mesenteric glands of a cow, and Professor Bang, of Copenhagen, a pure culture of avian bacilli from the liver of a chick. These cultures had been subcultured on glycerine potato and then transferred to glycerine agar every month for 14 years in his laboratory, the present growths representing the 184th generation. The growths were still profuse and true to type, but were quite non-tuberculigenic and non-pathogenic to animals. Every year since 1906 he had injected these bacilli into animals, and until 1912 had noticed no change in their virulence, i.e., to the 94th generation of subcultures. Afterwards attenuation became marked, and by a series of animal inoculations in 1913 and 1914 they were observed to be avirulent. During the war he took the cultures to France and continued the investigation there for four years, inoculating hares, rabbits, and guinea-pigs in 1916 and 1917. The cultures were in all cases non-pathogenic. In 1919 he inoculated more animals at the Lister Institute with large doses, but no infection was conveyed, and the animals remained alive and well for four months. These experiments, extending over 14 years, proved that virulent tubercle bacilli could be attenuated to such a degree as to be avirulent and non-pathogenic to highly susceptible animals, and showed, in his opinion, that we had a remedy against tuberculosis which would be of the greatest value, not only in the cure of the disease but in its prevention. Natural attenuation, while removing the virulence and toxicity of the organism, enhanced the value of the vaccine in treatment. In small-pox the immunity derived from inoculation of the virus of vaccinia was considerably greater than that which resulted from an attack of variola, because the defensive elements of the body had not been weakened in overcoming the virulence of the toxin. The treatment of disease by vaccines prepared from organisms attenuated naturally meant that the production of antibodies would take place rapidly without the preliminary shock which invariably followed the injection of a vaccine prepared from a virulent strain. Hitherto it had not been possible to test this in tuberculosis owing to the length of time necessary to produce a non-pathogenic strain of the bacillus.

His work on animals had shown that immunity against infection was produced by injection of attenuated bacilli, and it was reasonable to suppose that the same would hold good in the human. Cattle could be rendered immune to virulent bovine bacilli by previous inoculation with virulent human bacilli, and he was convinced that there was a marked antagonism in the human body between human and bovine infections; these two organisms could not flourish in the body at the same time. A child who developed a primary abdominal tuberculosis with involvement of the mesenteric glands or an infection of the neck glands, which were usually caused by the bovine bacillus, was immune to the human bacillus, and young adults attacked by the human bacillus, producing primary pulmonary tuberculosis, were similarly immune to bovine infections for the rest of life. The differentiation between human and bovine infections in the body was not sufficiently accurate to be decisive. There were atypical strains of bacilli which could not be classed with certainty, and the varying virulence of these bacilli and their effects on susceptible animals were still a matter of some uncertainty in a fair number of cases. With a view to determining whether the disease caused by the human bacillus was antagonistic to that caused by the bovine bacillus and vice versa, he had instituted a clinical observation on a large scale in a Liverpool hospital of 900 beds, of which he had sole charge for 18 years. During that time he had had the opportunity of treating over 10,400 persons suffering from tuberculosis in all its forms. There were 200 beds for tuberculosis, half for primary pulmonary tuberculosis and half for surgical tuberculosis—glands, bones, joints, and lupus. During this period there were 4800 cases of phthisis and 1820 cases of surgical tuberculosis. In no case of primary pulmonary tuberculosis were any of the following lesions developed during the course of the illness: tuberculosis of bones, glands, skin, or tuberculous meningitis. Several cases developed brain symptoms during the last stages of the disease, but they were due to insanity, toxæmia, or exhaustion, and in cases with meningeal symptoms, those examined post mortem were found to be of pneumococcal meningitis. Amongst the surgical cases 28 developed lung symptoms, and were examined by laboratory methods and animal inoculation. Of these, 25 died and were carefully examined post mortem. In all cases the infection in the lung was either by direct extension from cervical glands to the apex of the lung, or from a primary focus in the abdomen through the diaphragm to the bronchial glands and lungs. This clinical experiment convinced him that the human body was attacked by two quite distinct forms of tuberculosis, one conveyed from person to person by direct infection and attacking chiefly the lungs, or so-called consumption, the other conveyed by milk from tuberculous cows and developed in the first few years of life. These two diseases were caused by different types of tubercle bacilli which would not live in the body at the same time, and one disease produced immunity to the other. For this reason he always used a vaccine prepared from bovine cultures in the treatment of the human infections and vice versa. Most cases of tuberculosis were of low virulence and, given suitable conditions, were favourable for treatment, but in some cases the virulence was so high as to destroy the person in a few weeks or months, and these were the cases popularly known as "galloping" consumption. He thought that the virulence of the tubercle bacillus in this country was less than it was 30 years ago; the number of deaths from tuberculosis in 1920 in England and Wales was 12,000 less than in 1919. A large percentage of the population were immunised to some extent against further and more severe infection by having had a mild infection of tubercle, and if we could induce some immunity by artificial means in children whose parents were tuberculous, and who, by constant association with them, were liable to infection, we should have gone a long way towards stamping out tuberculosis.

The vaccine which he had prepared from these attenuated cultures was a bacillary emulsion of the bacilli, and contained all the products of the bacillus. It was non-toxic and avirulent, and produced no reaction, even in large doses. For purposes of immunisation of susceptible children six injections were given at weekly intervals, and repeated in three months. The doses recommended were 0·001, 0·002, 0·003, 0·004, 0·005, and 0·006 mg. No symptoms whatever had been observed to follow these injections. In the treatment of the active disease the doses used were much larger than had been possible hitherto; and the treatment should consist of at least 12 injections given in increasing doses at intervals of seven days. The doses commenced at 0·0001 and increased to a maximum dose of 0·025 mg. The vaccine should be freshly prepared from the cultures and should not be used after one month. The vaccine could be used with complete safety in any stage of the disease, and even in advanced cases he had observed great relief from night sweats, toxic symptoms, and erratic temperatures. The results in suitable cases were excellent, but it would require at least two years accurately to gauge the effect of the vaccine for purposes of immunisation.

Discussion.

Sir JAMES KINGSTON FOWLER said that he agreed with Dr. Raw in regarding scrofula and tuberculosis as essentially different. He had been led to this conclusion by having to estimate the degree of increased

liability to tuberculosis of those with cervical scars dating from early life. He had rarely seen cases of pulmonary tuberculosis in which there were neck scars. That some kind of immunity to pulmonary tuberculosis was conveyed by the other form acquired in early life might be one explanation. Dr. Marcus Paterson had told him that he had examined some hundreds of cases of pulmonary tuberculosis at the hospital to which he was attached, and only a very small proportion of the patients had evidence of having had glandular tuberculosis in early life. He had never seen a case of pulmonary tuberculosis in which he was convinced that tuberculin had done any good, but this did not invalidate what Dr. Raw had advocated. He thought that the evidence pointed to pulmonary and glandular tuberculosis being different infections. Eighty-five per cent. of cases of glandular tuberculosis were bovine, and all, or nearly all, cases of pulmonary tuberculosis were caused by the human bacillus.

Dr. WEBER said that the therapeutic use of tuberculin had now been almost given up all over the world, even in the country from which it had originated. Tuberculin, unfortunately, did not really produce immunity to tuberculosis (that is to say, to tubercle bacilli), though it could produce immunity to tuberculin. Granting that what Sir James Kingston Fowler had said was true (as he thought future statistics would ultimately prove it to be)—namely, that persons with "scrofulous" scars from infection with bovine tubercle bacilli in childhood were comparatively immune to grave pulmonary tuberculosis (from human tubercle bacilli), he did not take a quite hopeful view, from the therapeutic standpoint, as to the probable results of Dr. Raw's method of treatment. There was a great difference between persons who had been attacked by bovine tuberculosis as children and those injected with Dr. Raw's vaccines. In the former case the patients had been inoculated, and actually infected, with *virulent* bovine tubercle bacilli over a long period, and even they were not quite invariably protected from death by subsequent tuberculosis of the lung (human tubercle bacilli). What, then, might the result be of injections of Dr. Raw's bacilli, which had altogether lost any virulence? He (Dr. Weber) thought that the immunity produced even by actual inoculation with Dr. Raw's *living* cultures of non-virulent tubercle bacilli would probably last only a very short time. Much more proof to the contrary was needed.

Dr. W. CAMAC WILKINSON said that the only way to prove the incidence of bovine and human tuberculosis was to take a long series (300–400) of post-mortem cases and work out from the tuberculous lesions the existence of one or other or both varieties of bacillus. The two varieties could exist in the same individual in his opinion. Gaffky had found that in 300 consecutive post-mortem examinations on children there were 57 cases of fatal tuberculosis, and in 55 out of the 57 the tubercle bacilli were of the human type. In a further series of 100 consecutive post-mortem examinations on children who had died in a general hospital 21 per cent. of the deaths were due to tuberculosis, and only one was due to the bovine bacillus. In Japan the cattle were immune to tuberculosis. Where did the children get the disease? In Japan tuberculosis was relatively greater than in England. Dr. Wilkinson then spoke of the favourable experience he had had with tuberculin.

Dr. C. W. HUTT said that Stanley Griffiths had pointed out that a very much larger number of children exhibited bovine tuberculosis than Dr. Wilkinson had said.

Dr. RAW said, in reply, that he wished to establish the general principle that we had to deal with two infections. He had found that tuberculin prepared from cultures of low virulence was much safer for the patient than that prepared from virulent cultures. He had performed 1800 post-mortem examinations on patients who had died from tuberculosis, but had never seen tuberculous meningitis occur in a case of primary pulmonary tuberculosis.

WAR SECTION.

MEDICO-MILITARY TRAINING.

A MEETING of this section of the Royal Society of Medicine was held on March 14th, when Colonel H. E. R. JAMES read a paper on the best form of instruction for medical students to fit them to take their part in case of national emergency. The paper is published in full in the present issue of THE LANCET.

Mr. H. WANSEY BAYLY considered that there was urgent need for all medical students to receive some course of instruction in duties which they might be required to fulfil if called upon for war service. He very much doubted the reliability of Colonel James's statement that in future wars only those medical men belonging to the Reserve of Officers, or the Territorial Force, would be called up, as he believed that in the future, as in the past, temporary officers would have to be employed. Lack of proper instruction to M.O.'s, either before the war or during their military service, had entailed much unnecessary loss of life, and loss in the value of medical officers' services, and he stated that neither during his service at home, nor during his service as battalion medical officer in the Guards' Division, nor as medical officer to a brigade of artillery in France, had he ever received any instructions in his duties, with the result that he, in common with many other Territorial and Temporary officers, had felt that they had not been so useful as they would have liked to have been. It was true that orders and instructions were constantly being received on paper from headquarters, but such orders were liable to get lost or destroyed. The inspection and supervision were almost nil, so that it depended entirely upon the keenness of the medical officer as to whether he made any attempt to carry out the orders that he had received. Many medical officers seemed to consider that their duties consisted in attending to the sick when at rest, or to casualties when in the line, and failed to realise that their chief value lay in teaching preventive medicine, in carefully supervising the sanitation and hygiene of their unit, and in giving instruction in these matters to the officers and men.

In order to endeavour to obtain continuity in sanitation he had drawn up some battalion sanitary standing orders which, with the sanction of his A.D.M.S., were adopted by his battalion and which were published in THE LANCET of June 16th, 1917, and, he believed, were adopted in a few units. He considered that the cause of medical students' and medical men's reluctance in joining medical units at the present time could be summed up in one word—distrust—distrust of the War Office, based on many bitter memories. He considered that the instruction could be better carried out by the civilian teachers and civilian teaching hospitals than by the R.A.M.C., as the really essential portion of such education was very simple and did not take long.

Civil and Military Training Contrasted.

Mr. T. B. LAYTON considered that the duties of the R.A.M.C. officer have in the past differed from those of his civilian colleagues in three ways: (1) He has been employed in preventive medicine to an extent unknown to members of the civil branch of the profession; (2) he is always engaged to a certain extent in administrative work; (3) the sick and wounded are not his personal patients, but they are the patients of the corps, coming under him for a short time only. He (the speaker) considered it was necessary to organise our instructions on the principle of teaching the students such subjects as apply especially to military work, to which insufficient attention is at present paid in the curriculum. In his position as an officer the surgeon had certain duties common to other branches of the Service, such as procuring food, clothing, and quarters; the power to move bodies of men rapidly, which is known as drill; and a knowledge of military law. These portions of the student's education should be taught as an irreducible minimum or not at all. There are plenty of other subjects to occupy such short time as he can spare, which are of vital importance to

him as soon as the necessity arises. Advances of surgery in future wars would depend almost entirely upon the development of medical tactics, and unless we can apply to mobile warfare the six-hour ideal from wound to operating theatre all advances of civil surgery will be applied to military surgery in vain. For the junior ranks of the R.A.M.C. Mr. Layton would say it was enough if they studied the subject of shock and collapse in its relation to the transport of wounded. Hygiene of the march cannot be too strongly impressed upon anyone. He would have the students study it particularly in relation to the weight carried by the soldier and the problem of water-supply. He foresaw a great struggle with the combatant soldier in the future on the weight problem, and every medical man should be in the position to give firm advice on this point. The examination of recruits should be limited to men who have had training therein. The nation is, he believed, now spending thousands of pounds weekly on pensions to men with pre-war disabilities, which were not noticed on their enlistment forms (B178), or as the result of badly done boards (B179) in the early stages of demobilisation. He would urge that the chief subjects to be taught under the head of sanitation are those of food and of the louse problem. Besides that, he would teach them how to make a sanitary inspection with firmness but politeness. If the medical student learns all these things, he will have no time to study the army form on which to claim his allowance, how to obtain a tablet of aspirin, a bottle of brandy, a bar of soap, or a tin of pork and beans—he will learn these quickly when he once begins.

Opportunity for Military Training in the Curriculum.

Dr. C. H. MILLER thought that it would be possible for teachers in civil hospitals to point out the objects for which the Army Medical Service existed. In the field it was the minor malady and the slight wound that were important. A man who had sustained a compound fracture of the femur was useless to the army for many months, if not permanently; and therefore, from the army point of view, he was less important than a man suffering from I.C.T. It was not only incumbent on the student to learn about disease in all its aspects, but to realise that it was part of his duties to keep as many men fit as possible.

Dr. H. L. EASON considered that civilians were trained to consider the individual, whereas the army medical officer had to consider both patients and diseases in the mass. He thought it was impossible to give efficient instruction in hygiene and State medicine during the undergraduate's curriculum, as it was already overcrowded; but that some scheme would have to be devised whereby the claim for a doctor's service after qualification is possible for a period of 6 to 12 months for the purpose of army training. It had not always been realised by the R.A.M.C. that the day had gone by when they could expect a medical man to turn his hand to anything; this was a day of specialism, and some scheme must be devised whereby in a national emergency the chief medical officers should be allotted to posts for which their peculiar training fitted them. He was sure that if medical men were to be trained to fit themselves for national emergency, any such scheme devised for this purpose must be to a large extent compulsory.

Several other members of the section took part in the discussion, all agreeing that the really necessary education should be as simple in character as possible, and that the elements of war sanitation and hygiene were essentials, and expressing the opinion that there would be difficulty in obtaining recruits until the memory of various grievances (such as higher pay of Temporary over Territorial or Special Reserve Officers; the employment of specialists in ordinary routine work, while persons of no special knowledge were given positions as specialists; the payment of war gratuities on substantive rather than acting rank; promotion for reasons other than competency, &c.) had become dim through the passage of time. The discussion was a most interesting one, as contrasting the opinions and views of the Regular, and Territorial and Temporary branches of the Service; and the practical unanimity with which all those speakers who had held Territorial or Temporary rank agreed that the present lack of enthusiasm for military service amongst civil medical men and medical students was largely based on undeniable grievances during the late war.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

CONGENITAL SYPHILIS.

AT a meeting of this section of the Royal Society of Medicine, held on March 16th, Dr. F. S. LANGMEAD, the President, being in the chair, the discussion on Congenital Syphilis, adjourned from Feb. 25th, was reopened by Dr. H. MORLEY FLETCHER, whose paper appeared at length in THE LANCET of March 26th.

Post-natal versus *Ante-natal Treatment.*

Dr. LEONARD FINDLAY[1] said that he would like in the first instance to draw attention to the Wassermann reaction when properly carried out as being undoubtedly the most important aid to the diagnosis of the anomalous and late varieties of congenital syphilis. In support of this contention he referred to an analysis of 1000 reactions performed for him by Dr. R. M. Buchanan of Glasgow, in which the clinical and serological findings were contrasted. Cases of undoubted and suspicious early syphilis were divided into four groups according to the degree of clinical certainty of syphilis or no syphilis. In the cases clinically definitely syphilitic the reaction was positive in 98 per cent., whereas in those definitely non-syphilitic it was negative in 100 per cent. These figures, too, were in close agreement with those showing the behaviour of the reaction in the mothers of syphilitic and non-syphilitic children. Statistically, then, a positive reaction meant syphilis, and a negative reaction no syphilis, at least in the presence of active manifestations of disease. The serological test was, in fact, more frequently in agreement with the pathological lesions than the Widal reaction in the case of enteric fever on the finding of the tubercle bacillus in phthisis pulmonalis.

In view of the above the Wassermann reaction should be a great help towards deciding if a particular pathological process possessed a syphilitic basis. It would be curious if it were only the anomalous forms of the disease that gave a negative reaction, and it was difficult to understand how the syphilitic infection could so profoundly alter the child's nutrition or call forth radical changes in various organs and yet fail to induce the usual serological changes. Yet this was what many writers inferred to happen. In the presence of a negative reaction one demanded very strong clinical proof that the diseased condition was of a syphilitic nature. As the reaction persisted long after all clinical manifestations had disappeared, it should be our most delicate test of cure and a good gauge of the efficacy of the different methods of treatment of congenital syphilis as practised to-day. Treatment with mercury alone was most unsatisfactory, because a large proportion of the youngest patients died; in his own experience 70 per cent. of these under 3 months of age.

With the combined treatment with salvarsan or its allies and mercury the mortality of the young patients had been greatly reduced, only some 20 to 30 per cent. dying, but unfortunately, at least as evidenced by a persistently negative reaction, a cure was only obtained in a proportion of the cases. In children under 1 year of age 8 per cent. could not be cured with as many as 14 injections and in children over 1 year of age a cure could not be obtained in 50 per cent. of the cases. Such a state of matters was one with which no one can rest satisfied and contrasted very markedly with the results of ante-natal or prophylactic treatment, by means of which he had obtained 100 per cent. of successes—at least the children had never reacted positively to Wassermann's test nor had they presented any signs of the disease, even when observed over as long a period as seven years. Perhaps the most striking

[1] Dr. Findlay's remarks were made at the meeting on Feb. 25th, but were not received in time for insertion in our issue of March 5th

feature of ante-natal treatment was that these women continued to bear healthy non-syphilitic infants, though no further antisyphilitic treatment had been instituted. Ante-natal treatment was undoubtedly the treatment par excellence, and should be encouraged by us in every manner possible. In his opinion this implied notification. By ante-natal treatment all miscarriages and still-births could be avoided and the health of the future progeny ensured.

Ante-natal and Neo-natal Disease.

Mr. JOHN ADAMS confined his remarks to ante-natal syphilis, and the disease as it occurs in the newly born.

Congenital syphilis, he said, was rarely seen clinically in young people and adults, and the treatment of such cases was unsatisfactory, whereas the treatment of ante-natal syphilis and post-natal syphilis in infants was most encouraging. The best time to treat mother and child was at the earliest possible moment; the youngest baby he had treated was an hour old. The results were seen at once, and there was no secondary eruption. The Wassermann reaction rarely reverted to positive, and for the past three and a half years his cases were tested every three months. The year ending August 31st, 1920, was a particularly successful one at the Thavies Inn Venereal Clinic for Pregnant Women. Thirty-seven mothers had been admitted with syphilis, 37 babies had been born alive, one with a positive Wassermann reaction, 36 with a negative reaction; none of the babies died of syphilis, and no fœtus was stillborn from syphilis. The babies were treated according to a special scheme, which had been found most satisfactory, by intramuscular injections of galyl in glucose, intramuscular injections of mercury, and mercury by the mouth.[2] He thought that, except in the most expert hands, injection into the superior longitudinal sinus or external jugular vein must be difficult, dangerous, and disastrous. Mercurial treatment alone was too slow, but the results of galyl were seen in the baby within a few hours, and in adults within an hour.

When women were infected with syphilis during the seventh month of pregnancy the baby was healthy, which bore out Dr. Routh's view as to the protective part played by the syncytial cells; besides this, the lipoids appeared to have a protecting influence on the fœtus. Dr. Routh, in his lecture on Ante-and Post-Natal Syphilis before the Harveian Society in January, 1918, stated that, according to his estimation, 27,000 deaths occurred annually in England and Wales alone in the ante-natal period and the week following birth as a result of syphilis. It would seem that the reason why we saw so few children and adults affected by congenital syphilis in clinics was because they had ceased to exist.

Mr. Adams thought that venereal disease lying-in centres should be established in every town with medical officers specially appointed to look after the cases. He looked forward with confidence to the future, expecting that the wastage of infant life from syphilis would almost be abolished.

Dr. REGINALD JEWESBURY gave the results of the first 12 months' experience in the venereal clinic for children at St. Thomas's Hospital. These results are about to be published.

Infection from the Mother.

Mr. J. E. R. MCDONAGH said that if a woman contracted syphilis before the fifth month of pregnancy the child always contracted the disease; if she became syphilitic during the sixth and seventh months the child was affected by congenital syphilis in about half the cases, and if during the eighth and ninth months the child escaped.

Many of the infants who escaped infection in utero acquired syphilis by direct contact with their mothers soon after birth, and quite a large number of cases of so-called congenital syphilis were really cases of acquired. When a woman contracted syphilis, if she should have nine pregnancies, the first and last three were most likely to result in abortions, stillbirths, or in the birth of apparently healthy children who would show symptoms before the sixth week. Non-syphilitic children were most likely to be born in the middle. This was also true of a woman who conceived and contracted the disease from the embryo (conceptional syphilis). Although this was a general rule it must never be forgotten that once a woman had borne a syphilitic fœtus she was ipso facto herself a syphilitic and therefore capable of infecting all her future offspring, even if the father had never had the disease. A syphilitic woman, therefore, should be treated throughout the whole period of each succeeding pregnancy, irrespective of the amount of treatment she had already undergone.

With regard to the effect on the child of the treatment of its syphilitic mother, he said that, provided that the mother had had treatment throughout the whole of pregnancy, or when the disease was first diagnosed, one might expect the birth of an apparently healthy child. Without being able to give the exact percentage, he had formed the opinion during the last ten years that the majority of those apparently healthy children were really syphilitic. They did not develop symptoms before the sixth week, as used to be the case in the pre-salvarsan era, but at the age of 4 years or more developed eye, ear, or nervous troubles which did not respond to treatment. The syphilitic child in utero might be so influenced by the treatment of its mother as to behave like an acquired syphilitic whose response to the disease had been cut so short by treatment that when a recurrence appeared the lesion aped the primary sore. He now always treated for two to three years every child born of a syphilitic mother, however healthy at birth it might appear to be. Whether such a course would prevent syphilis hereditaria tarda only the future would show.

Value of Serological Tests.

As to whether pathological tests were of any value in discerning which children were syphilitic and which were not, he said that it was the rule for children born of treated syphilitic mothers to be serologically negative and to remain so till clinical manifestations appeared, even if they did not appear for some years, therefore a negative complement-fixation test could never be held as signifying that the child was not syphilitic. In cases in which the test was positive during the first months treatment only very slowly rendered it negative, and without treatment it tended to become negative about the age of puberty. When the test became positive for the first time three or four years after birth, it remained positive for the rest of the patient's life irrespective of the amount of treatment he or she underwent. If a mother gave a positive reaction at the time of birth the umbilical blood was usually positive as well; and even the infant's blood might be positive, although the child was not necessarily syphilitic, as, for instance, when the mother contracted the disease at the eighth month. Therefore a positive reaction given by a child at or soon after birth was not proof positive that the child was syphilitic.

Mr. McDonagh thought that we should see less early congenital syphilis in the future, but much more syphilis hereditaria tarda, especially in cases of late congenital nervous syphilis. It was impossible to say yet whether treatment of both the mother and the child would prevent this. On the other hand, it was possible to assert that pathological tests would neither help in prognosis nor indicate whether a case was cured or not.

Interstitial Keratitis.

Mr. H. NEAME discussed the results of treatment in 38 consecutive cases of interstitial keratitis. The treatment consisted of one, two, or three intravenous injections of novarsenobillon or diarsenol. Mercury by the mouth was given simultaneously.

Of the 38 cases 24 were suitable for inclusion in a group with a view to estimating the value of the treatment. In this series the arsenical preparations combined with mercury had not prevented five patients, who had come for treatment with keratitis in only one eye, from involvement of the second eye. Three had still only one eye involved. The evidence as to whether treatment prevented other complications, such as choroido-retinitis, was insufficient. There were five cases with this complication in the series. Three of these were old cases; one had been under treatment for interstitial keratitis in one eye, the other eye having been diseased six years before; the last had had the disease and was treated by other means for nearly a year before arsenic injections were given. Of the rest of the series there were only three in which choroiditis was possibly present. It was probable that the arsenical preparations had an effect on the choroid, since it was a very vascular structure. With regard to the effect on interstitial keratitis already established, it would appear from the visual acuity results in this series and from Wallis's experiences in 1913 that arsenical preparations had some influence in improving the final vision and in its more rapid attainment. With the growth of prophylactic treatment during pregnancy it was possible that the incidence of interstitial keratitis, like that of other manifestations of congenital syphilis, would dwindle.

Changes in the Teeth.

Mr. A. T. PITTS spoke of the teeth in congenital syphilis, and said that although we were not now so

[2] Royal Society of Medicine: Section of Obstetrics and Gynæcology, Nov. 7th, 1918; Nov. 4th, 1920; THE LANCET, 1918, ii., 707, and 1920, ii., 990.

completely dependent on clinical manifestations for diagnosis since the introduction of the Wassermann reaction, yet the presence of certain dental dystrophies peculiar to congenital syphilis was still a sign of considerable positive value.

The teeth which showed characteristic modifications were the upper central incisors and the first permanent molars. The former were described by Hutchinson in 1858, and the latter appeared to have been recorded by Moon, the dental surgeon to Guy's Hospital, in 1878, and were often spoken of as Moon's molars. There were two elements in a typical "Hutchinson's" incisor, the narrowing toward the tip and the notch. The first indicated an alteration in the whole architecture of the tooth, and would suggest that before calcification commenced the cells of the tooth germ were affected by the syphilitic virus. The notch would appear to be due to a true hypoplasia, due to some interference with calcium metabolism, and comparable with the hypoplasia seen in rickets and other disorders of childhood. Mr. Dolamore had suggested that this might not be an essential part of the syphilitic manifestation, but due to some intercurrent illness of malnutrition. Stein had stated that there were four stages in the life-history of a syphilitic tooth: (1) a diminution in breadth and an area of badly formed enamel at the cutting edge on eruption; (2) wearing of the cutting edge, which left the typical notch; (3) obliteration of the notch from wear to only a slight bevel on the anterior edge; and (4) obliteration of the notch and so much of the tooth that its diagnostic value vanished.

It must be admitted, however, that though this grouping of the life-history of the Hutchinson tooth was attractive, its clinical history was not absolutely conclusive. It should be remembered, however, that there might be an early stage when the notch was absent, and an undue insistence on its presence might blind an observer to the significance of a tooth unnotched, but with a marked narrowing toward the cutting edge. In his opinion, the enamel of syphilitic teeth was usually normal and showed no greater liability to caries than any other teeth. The view that mercury was the cause of hypoplastic teeth was not generally held nowadays. The lateral incisors of the upper jaw and the lower incisors might also show the characteristic shape, but much less commonly, and only rarely without the upper centrals being affected. Moon's teeth also showed a diminution in breadth towards the masticating surface, and shared the characteristic alteration in their architecture. The cusps were stunted and rounded; Moon described them as "dome-shaped," and an American writer had recently described them as the "mulberry" molar. Their appearance was equally characteristic with Hutchinson's teeth, but had to be distinguished from hypoplasia. In syphilis the molar tooth seen from the side view was dome-shaped, almost conical, and without the bulge of enamel usually present. The masticating surface was a flat plateau on which the rounded stunted cusps projected like small beads.

Another sign of congenital syphilis described by Sabouraud was said to affect the upper first molars only, and consisted of an accessory cusp on their internal surface at the anterior corner. This was a frequent malformation and often existed alone in a mouth whose dentition was otherwise regular and normal. It occurred in so large a proportion that it must be an anatomical variation, and he thought it was without pathological meaning. The same variation was sometimes found in the upper second deciduous molar. With regard to the milk dentition he was doubtful whether there was any condition which could be regarded as truly diagnostic of congenital syphilis, although the changes might be suggestive. A few cases of Hutchinson's teeth in the milk dentition had been recorded, among which were 27 cases recorded by Parrot, who, however, regarded rickets as a syphilitic manifestation. Calcification of the deciduous incisors commenced at the sixteenth to eighteenth week of intra-uterine life, and syphilis attacking the fœtus at that early stage was more likely to cause its death. This was probably the reason why a dental manifestation in the milk dentition was so rare. He suggested that some of the examples of Hutchinson's teeth recorded in the deciduous dentition might really have been cases of caries which had produced notches.

One disorder found in milk teeth, undoubtedly associated in some cases with congenital syphilis, was hypoplasia. Out of 4000 children he had only been able to collect 20 cases. It must be caused by factors operating before birth, and as syphilis was the disease which was most important at this period, it was reasonable to suppose that it must be included among the diseases which caused defective development of the deciduous teeth. There were, however, other causes, such as malnutrition of the mother, and a lack of vitamines in the maternal diet. Such must be common in mothers of the poorer classes, and yet hypoplasia of the milk teeth was very rare. It was of interest that out of his cases four occurred in congenital syphilitics, and in these the hypoplasia was especially well marked.

Without being dogmatic on such scanty evidence he would like to suggest that on a priori grounds congenital syphilis should be regarded as one of the causes of hypoplasia of the milk teeth, and that any well-marked case should arouse a suspicion sufficient to warrant further investigation.

Infrequency in General Practice.

Dr. RONALD CARTER said he had had 25 years' experience in general practice and 14 years at infant welfare work, and congenital syphilis was, in his experience, a comparatively rare disease.

He referred to a passage in Dr. Amand Routh's address last November on Latent Syphilis, in which he quoted some statistics of Dr. Helen Campbell, chief medical officer of the infant department of Bradford, on the frequency of congenital syphilis in industrial cities. Of 2172 infants born in 1918, 1606 were registered; the infant mortality was due to congenital syphilis in 80 per cent. of the deaths. Dr. Campbell ascribed these startling figures "to the fact that congenital syphilitic infants are peculiarly selected for attack by respiratory, gastro-intestinal and specific infections, such as measles, &c., which kill them in much larger numbers than infants not so affected." Dr. Carter pointed out that no pathological report of the cases was given and that, therefore, these statistics were of no value. They could not in any way represent the frequency of the disease amongst the industrial population.

He regretted that statistics which were so unreliable should have been quoted.

A Summing-up.

The PRESIDENT said that in the few minutes that remained he would not attempt to summarise the discussion, but would mention one or two important conclusions which could be drawn. On the diagnostic side it was clear that the general opinion was that a positive Wassermann reaction was good evidence of the presence of syphilis, except within a short time after birth, whereas there was some difference of opinion as to the value of a negative reaction. He thought that Mr. O. L. Addison's contribution had shown conclusively that what was generally known as syphilitic epiphysitis was really a manifestation which was very generally distributed through the osseous system, a conception of the disease which was not as well known as it should be. The importance of X rays therefore in diagnosis, especially on the surgical side, was evident. Sir Humphry Rolleston, as also Dr. Morley Fletcher, had broken a great deal of new ground, and had stimulated us to the closer investigation of a large number of disorders of doubtful ætiology. He was sure that they would be the first to agree that some time must elapse before we could postulate the influence of syphilis in their production. Of extreme practical importance was the general agreement upon the value of antisyphilitic treatment of the pregnant mother. The discussion had been a very valuable one in many ways, and if it had done no more than bring this point of view decisively before the profession it had played a very useful part.

Sir HUMPHRY ROLLESTON, in his reply, said that he thought that some of the most important contributions to the discussion were those on the special subjects. There was clearly a difference of opinion as to the incidence of the disease. The view taken by Dr. Morley Fletcher that there had been a change in type was very interesting.

SOUTH-WESTERN OPHTHALMOLOGICAL SOCIETY.—The meeting of this society, held on March 9th at the Bristol Eye Hospital and presided over by Mr. E. Richardson Cross, was well attended, in spite of the scattered nature of the area covered by the society. The morning was devoted to examination of a number of interesting cases, among which may be mentioned one in a child, shown by Mr. A. N. Godby Gibbs (Bristol), which illustrated very well the difficulty of distinguishing between glioma and pseudo-glioma retinæ. After luncheon the meeting was addressed by Mr. R. J. Coulter (Newport) on Some Squint Problems. In this he adopted heterodox views in order to provoke discussion, and a good debate ensued.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

AN ordinary meeting of this society was held on March 18th at 1, Upper Montague-street, W.C., Dr. F. E. FREMANTLE, M.P., the President, being in the chair. Forty-one new members were elected.

Dr. A. T. NANKIVELL (M.O.H., Poole) read a paper on

The Relation of the Laboratory to Preventive Medicine.

He spoke of the present-day cry for "economy," and said that it would be well if the people would rather ask for "science," for where the voice of the scientist was heard economy and thrift had followed. If the public would follow their scientific advisers, the health, and therefore the prosperity, of the community would be vastly bettered. The people were very ignorant of the science of public health. They knew little of the triumphs over malaria, plague, cholera, enteric, diphtheria, anthrax, and tetanus, and while they were aware that the Panama Canal existed, they were ignorant of the work of the scientists who conquered disease and made its construction possible. The first person to realise the value of the laboratory to the health department was Dr. D. S. Davies (M.O.H., Bristol), who was a pioneer in the large scale bacteriological examination of diphtheria contacts. The speaker heard with regret that some M.A.B. hospitals were discharging their diphtheria cases without swabbing. In Poole, where active swabbing was performed, including all sick school children and all cases of sore-throat, purulent nasal discharge, and discharging ears, the case mortality from diphtheria was only 3 per cent. Perhaps the laboratory was most useful in connexion with the diagnosis of diphtheria and tuberculosis. To-day in England and Wales practically all counties and county boroughs had their own laboratories or arrangements with laboratories at hospitals or universities, but many smaller towns and rural districts had no adequate arrangements. There was no doubt that with adequate staffing small laboratories were most useful, especially in saving time in connexion with diphtheria swabs. Every whole-time M.O.H. should have a laboratory to deal with diphtheria, sputa, ringworm hairs, blood, fæces, and water samples. In the larger places they might undertake all pathological work, including morbid histology and animal inoculation. General practitioners made much use of such facilities, and small fees might be charged, which were welcome in place of the fancy prices charged by some laboratories. In Poole the laboratory at a flat rate of 1*s.* 6*d.* per specimen was almost a paying concern. A fully-equipped county laboratory might extend its scope still further to agricultural bacteriology, for example. Chemical analysis should be left to the public analysts. The Dawson Report foreshadowed laboratories at the primary health centres, but Dr. Nankivell suggested that the family doctor, in respect for whom he yielded to no one, is but rarely competent to manage a laboratory, and that it would be better to continue to use the existing laboratories of the public health departments. The crying need of to-day was research and a close coöperation between the statistician, the epidemiologist, and the laboratory. Every M.O.H. who has a laboratory might undertake some research. To them was given the opportunity, and they would only have themselves to blame if others took the chance which they had missed.

Dr. C. W. PONDER (Pathologist and Assistant M.O.H , Kent) said that at his county laboratory they examined 20,000 specimens last year. They served a population of one million, and 450 doctors were continually sending specimens. No charges were made, and the inclusive cost for a year, after the deduction of £570 received back on account of venereal work, was £1250. The charge at a commercial laboratory would have been over £3500. He was not quite so sure of the value of swabbing in dealing with the prevention of diphtheria in large populations, though he realised that it gave good results in isolated communities. A special use of the laboratory was in educating the practitioner. Bacteriology was of great importance in dealing with typhoid fever, and he instanced an outbreak at Strood from infected water-supplies which was nipped in the bud by action taken by Dr. W. G. Howarth following upon the discovery in the laboratory of four simultaneous positive Widal reactions from that town. He thought that for poor people the public health laboratory should do non-infectious work, such as vaccines, sections, and blood examinations. Why should not the present local and county laboratories be linked up with the primary and secondary centres of the Dawson Report? In connexion with diphtheria swabs, delay in the post was a great trouble. He found that nearly 90 per cent. of positive diphtheria swabs were diagnosable by direct smear before culture, and this method should always be practised.

Dr. J. A. WATT (M.O.H., Ilkeston, and T.O., Derbyshire) said that the Derbyshire laboratory also dealt with the whole county. No charges were made. He agreed with the practice of taking no swabs from diphtheria cases on discharge from hospital. He believed that the cases which persisted in giving positive swabs over a long period did no harm. In typhoid fever it was most important to test the blood of all cases of illness in the family. He was in favour of attaching small laboratories to the primary health centres, if started.

Lieutenant-Colonel J. A. ANDERSON, R.A.M.C. (Assistant Director of Hygiene, R.A.M. College), stated that in the army there was better coöperation between the hygienist and the pathologist than in civil life. Close intimacy was essential, and chemical, entomological, and biological laboratories were needed as well as bacteriological. In Salonica he had found all these necessary in dealing with malaria. Through laboratory work they had found that the application of cresol to pools, &c., gave better results than the oil which was available. The education of the general practitioner was more important than of the sanitary specialist in this respect. The speaker wondered whether the mobile laboratories, which were so valuable in the war, would not also be useful in civil practice.

Dr. E. W. GOODALL (Metropolitan Asylums Board) agreed that every health authority should have a well-equipped laboratory. In collaboration with the late Dr. Washbourn he had had a good deal to do with the inclusion of bacteriology in the curriculum for medical students. He felt, however, that they had not got from bacteriology all that they had at one time expected. At his hospital they did not swab diphtheria cases on discharge. He took this course with a full sense of responsibility and in the knowledge that the cases were carefully watched by the M.O.H. For many years he had insisted on three negative swabs before discharge, but the results under that system had been no better, and return cases as common. Swabbing had been as devoid of results in connexion with post-scarlatinal diphtheria. The swabbing of all admissions and the isolation in a separate ward of those with diphtheria bacilli had not made the least difference to the incidence of diphtheria in the scarlet fever wards. They found that 10 per cent. of the scarlatinal admissions were reported as positive and had to be isolated. He questioned how many "positives" were really virulent bacilli. There was work which showed that only those from recent cases of diphtheria were virulent. The needless discovery of harmless positives was a nuisance. The matter was certainly one which urgently needed settling. He thought that valuable statistical comparisons might be made between M.A.B. hospitals having different practices in regard to swabbing. In connexion with the remarks on the laboratories proposed in the Dawson Report, he reminded the meeting that these were proposed for clinical and not for public health purposes.

Surgeon Rear-Admiral P. W. BASSETT-SMITH (R.N. College, Greenwich) said that the greater part of naval medicine was preventive, and that laboratory work was of the greatest importance. They had laboratories on all great ships and in all hospitals. The medical personnel was well versed in laboratory procedure, and the hygiene officers in close touch with the

laboratories. They regarded it as important that no diphtheria cases should go back to the crowded conditions on ships until three negative swabs had been obtained. Where they had positive results and no clinical signs, virulence tests were done. At Greenwich School they practised widespread swabbing during the occasional diphtheria outbreaks. The laboratory was very important in the discovery of typhoid carriers. Laboratories should not be too small, as numerous places cannot all have expensive equipment and trained bacteriologists.

Dr. R. VEITCH CLARK (M.O.H., Croydon) had found that it was a sound economic proposition to run a fully-equipped laboratory for a district of about 200,000 population. In closed communities, such as schools and orphanages, he had been able by examination and swabbing to stop persistent outbreaks of diphtheria. A laboratory was essential both for clinical purposes and for administrative preventive medicine. He had greatly regretted, in connexion with two outbreaks of infective jaundice, that he had not a well-equipped laboratory at his disposal. He instanced dental decay, pyorrhœa, pseudo-rheumatic conditions, and the use of vaccines in respiratory diseases as requiring research. It was also required in connexion with school medical work, which was too much concerned at present with the mere piling up of statistics. M.O.H.'s should make special note in their annual reports of such conditions and epidemics as demand research, and of the difficulties experienced.

Lieutenant-Colonel F. HARVEY, R.A.M.C. (Deputy Director of Pathology, War Office), remarked that Dr. Nankivell's laboratory work in France was well known to him. He referred to the early systematic bacteriological work at the R.A.M. School at Netley. In 1898 they had there an excellent course with which was associated the names of Sir Almroth Wright, Sir David Semple, Sir William Leishman, and Sir William Horrocks. In the army there was a very close link between public health and the laboratory.

Dr. S. MONCKTON COPEMAN (Ministry of Health) said that too much prominence had been given to swabbing and "carriers" in diphtheria, and great expense was often wasted in this connexion. Seven per cent. of the population harboured diphtheria bacilli (so-called) in their throats. Virulence tests must be done, and if virulent the result was much more important. What was to be done with the carrier when discovered? Sections of the tonsils showed that the bacilli were usually deep in the crypts and not on the surface, and therefore surgery should be thought of. Recent American work claimed value for the testing of communities by the Schick reaction and the injection of toxin-antitoxin mixtures to produce immunity in those who were found by this reaction to be susceptible. The immunity thus produced was said to last three or four years (instead of a few weeks only, as when antitoxin only was injected), and the likelihood of anaphylaxis was said to be less. The Schick reaction could be tested again to determine whether the immunity had persisted. The results of the reaction indicate that many acquire immunity in a diphtheria outbreak without getting the disease in clinical form. Experiments were to be carried out shortly at Bristol on these lines. Where there was a good university laboratory Dr. Copeman thought it was better to make use of it than to start one independently in the health department. In any case he did not approve of the multiplication of small laboratories.

Dr. T. SHADICK HIGGINS (M.O.H., St. Pancras) doubted whether even the virulence test was sufficient to substantiate the dangerousness of so-called diphtheria carriers. He instanced work which he had done at Birmingham in collaboration with Dr. C. J. Lewis, in which scarlatinal convalescents were found frequently to have in their noses diphtheria bacilli which on isolation proved to be virulent to guinea-pigs. These patients had not infected any members of their families with diphtheria, though many of them had caused return cases of scarlet fever.

Dr. HERBERT JONES (M.O.H., Herefordshire Combined District) said that he now discouraged the swabbing of diphtheria contacts, and that the results were no better than in the absence of swabbing. They must rely more on the virulence test. They might be doing harm in relation to public opinion by pushing such bacteriology too much to the front.

Dr. T. EVANS (M.O.H., Swansea) remarked that it was his practice in dealing with diphtheria contacts in schools to swab only cases with clinical signs, especially nasal discharge, enlarged glands, anæmia, or recent sore-throat. He questioned whether the Schick reaction could be applied to large populations. He instanced various directions in which laboratory research was needed, and claimed that there was no necessity for separate laboratories for bacteriological and pathological work.

The PRESIDENT observed that the discussion had centred too much round the subject of diphtheria. He said that the value of laboratories in military medicine had been proved over and over again. At the present time our difficulty was that we knew far too little to enable us to interpret bacteriological results, and the chief need was for research. The M.O.H. could spend his time most profitably in administrative work, and should not devote himself overmuch to petty laboratory work. There should be only one laboratory for a given area, which should do all the civil work required in the district, as well as naval and military work. They must press ahead, but go very carefully. Medical students should be turned out in the future with complete bacteriological knowledge.

Dr. NANKIVELL briefly replied.

Meeting of the Welsh Branch.

A meeting of the Welsh Branch of the Society of M.O.H.'s was held at Shrewsbury on March 19th, Dr. Colston Williams in the chair. A paper was read by Dr. Howard Jones in which he described steps taken in Newport to improve existing housing conditions, first by persuading occupiers to carry out improvements recommended by the health authorities, and then, through frequent inspection, by insisting on tenants maintaining hygienic conditions. Great advance in the direction of raising the amour propre of the tenants was stated to have been obtained without proceeding to legal compulsion.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

Corporal Punishment in Schools.

AT a conference of this Association, held on March 18th, representatives were present from every class of educational institution. Mr. R. C. ELMSLIE, the President, referred to a previous meeting at which the medical aspects of the matter had been discussed and a resolution passed:—

"In view of the evidence of damage from caning on the hand, and the possibility of consequent impairment of function, this society is of opinion that caning on the hand should be forbidden."

That resolution had been sent to the Home Office, the Board of Education, and the Ministry of Health.

Dr. E. H. T. NASH referred to instances of injury he had seen, and to a questionnaire he had sent round, to which there was an almost unanimous reply that whilst corporal punishment was an occasional necessity it should never be by caning on the hand. He advocated the tawse as used in Scotland, or else the cane on Nature's appointed place.

Canon A. A. DAVID, Headmaster of Rugby, thought punishments had much decreased in the past 20 years. Boys were better trained in preparatory schools and enjoyed much increased activities, so that masters could concentrate on positive encouragement and guidance rather than on the negative restraints and the rod. The less boredom existed the less need for punishments, but the element of fear was still necessary. If they caned they must hurt. He would not give up the stick, but it was not displayed or used indiscriminately.

Mr. C. W. CROOK, ex-President of the National Union of Teachers, said the elementary school teacher was at a disadvantage compared with the public school masters, as he had not the power of expulsion. The risks of caning had been much exaggerated. A body like the London County Council, responsible for a million children, would not have adopted caning on the hand with the restrictions they had

without having some idea that it was the best form of punishment; and if not that, what was there for girls? An elementary school teacher who applied the rod to the back and raised wheals would soon find himself before the magistrate accused of brutality. He found the mere entry of a boy's name in the punishment book often sufficient. The time had not yet come when the medical profession could convince those responsible for elementary education that, if they punished at all, it must be elsewhere than on the hand.

Dr. W. GRIPPER, M.O., Royal Female Orphanage, found corporal punishment necessary. It was administered by the matron in camera. He could not say that caning on the hand was really bad.

Mr. M. J. RENDALL, Headmaster of Winchester College, regarded caning on the hand as a distinct blunder. They thought of the hand as sacred at Winchester and avoided damage even for a short space of time. Punishment by prefects (senior boys) for quite trivial offences was very useful under careful regulation. The difference in opinion between the elementary school and public school view was remarkable and he hoped would be overcome.

Mr. W. SHARMAN, London Teachers Association, instanced a case where a teacher who had caned an insolent boy on the body had been punished himself by reduction of salary representing 60 times the amount he would have been fined had he assaulted the boy in the street.

Mr. J. R. ECCLES, Headmaster, Gresham's School, Holt, said he came into personal touch with all his 250 boys, and had not caned a boy in his own house for a dozen years. Caning was not degrading; it might be necessary, but should always be on the buttocks. He was wholly against birching or the frequent use of corporal punishment. He had used deprivation of games or privileges as a substitute punishment.

Miss DEANE, Kentish Town Secondary School, had doubts as to the efficacy of any corporal punishment. For girls in secondary schools it was unknown, and, from what had already been said, seemed rather an acknowledgment of failure on the part of the teacher.

Mr. L. LUMBY, National Union of Teachers, said that caning on the hand should never leave a bruise. If the tawse was recognised it would much simplify matters.

Mr. GUY KENDALL, University College School, used two-hour periods of detention, which had resulted in corporal punishment becoming obsolete, not because it was not wanted, but because there were persons who could not be trusted with it.

Rev. CECIL GRANT, St. George's School, Harpenden, commenced his teaching career strongly opposed to corporal punishment, but had reluctantly come to the conclusion that there were occasions on which it was essential. Detention and deprivation were, however, good substitutes on most occasions.

The PRESIDENT said that there had been practical unanimity amongst the medical members that the use of the cane on the hand was unjustifiable, and that they must condemn it whatever the teacher might say. He felt with the Head of Winchester that there was too wide an interval between the public and elementary school standards, and that the traditions which led to the present regulations in the public schools were of great value and should be a guidance to all teachers.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this society was held at the West London Hospital on March 4th, Dr. F. J. MCCANN, the President, in the chair, when a paper was read by Dr. BERNARD H. SPILSBURY on

Instrumental Abortion.

Dr. Spilsbury said that abortion was a practice by no means confined to civilised communities and instanced some of the crude methods in use amongst primitive races—e.g., pummelling the abdomen with stones. For the production of abortion the most effective methods were those in which violence or other physical agents were applied directly to the uterus. Success depended upon the amount of the local disturbance and to some extent upon the readiness of the uterine reaction, a factor which varied in different individuals.

The following were some of the commoner methods used:—

(1) Passing an instrument into the cervical canal or into the body of the uterus. In self-attempted abortion the favourite instrument was a hatpin, crochet hook, or a skewer. Skilled abortionists resorted to more suitable instruments, such as catheters. Without the requisite anatomical knowledge a woman was unlikely to pass an instrument into her own uterus, unless prolapse was present, when she might be successful.

(2) Intravaginal injections of various fluids.

(3) Intrauterine injections of fluids, of which soap solution was a favourite. Even scalding water had been used.

(4) Blowing air through a catheter passed into the uterus.

(5) Manipulation of the external os uteri with the hand.

(6) Packing the vagina.

(7) Abdominal massage of the uterus.

(8) The local application of electricity.

(9) Dilatation of the cervix and immediate removal of the products of conception, a method chiefly employed by medical practitioners.

The dangers of instrumental abortion were three—viz., infection, hæmorrhage, and shock.

Infection was favoured by the large raw surface in the uterus and the proximity of large blood-vessels to the placental site. Streptococci and the colon bacillus were the most frequent infecting agents. In fatal cases the course of infection varied greatly. At the one extreme was a rapidly fatal septicæmia with little or no local suppuration, and at the other was a prolonged septicæmia ending in pyæmia. Septic pulmonary infarcts were common. Massive embolism of the pulmonary artery might occur.

Hæmorrhage alone was occasionally responsible for death when the placental site was damaged or the uterus perforated, but it was more frequently associated with septic infection in fatal cases.

Shock often occurred at the moment of passage of an instrument into the uterus and was usually transient, but occasionally instant death occurred. This might also result from the injection of fluid into the uterus.

Discussion.

The PRESIDENT referred particularly to treatment of cases of attempted abortion. Treatment must be prompt and first directed to a thorough cleansing of the whole genital passages. If this proved ineffective there should be no hesitation in opening the abdomen and, if necessary, removing the uterus.—Dr. A. LAPTHORN SMITH endorsed the President's statements, and pointed out that the doctor's first duty was to save the patient and not that of detective. It was always wise in these cases to call in the aid of another practitioner, both for his medical assistance and to avoid any appearance of secrecy. After cleaning the passages he advised the free use of powdered boric in the vagina.—Dr. W. H. WILLCOX congratulated Dr. Spilsbury on his comprehensive paper, and referred to Dr. Spilsbury's unrivalled experience of these cases during the last 15 years. He said that frequently instrumental abortion was aided by ecbolic drugs given either before or after the mechanical interference. He was glad that two important points had been emphasised—viz., that the mere passage of an instrument into the pregnant uterus might cause sudden death. Several instances of this had occurred in recent years. The second point was the extreme rapidity with which septicæmia often occurred, since in many instances septic organisms were directly introduced into the peritoneal cavity.—Dr. J. A. MANSELL MOULLIN agreed with what had been said regarding early treatment. Free drainage of of the infected uterus was imperative, with laparotomy if necessary.—Dr. A. KNYVETT GORDON said that from his experience in the treatment of a large number of cases of puerperal septicæmia he had come to regard the administration of large doses of anti-streptococcic or anti-colon bacillus serum (according to the bacteriology of the case) as the most valuable constitutional remedy we had. At least 100 c.cm. should be given in 2 pints of saline into the subcutaneous tissues. He strongly deprecated the use of vaccines in acute cases. It was wrong in theory and disastrous in practice.—Dr. F. G. LLOYD said that these cases were always unsatisfactory from the practitioner's standpoint. He strongly advocated sharing the responsibility with another practitioner in suspected cases of criminal abortion. He pointed out that any deposition made by the patient could only be taken as evidence if the patient fully appreciated that she was beyond hope of recovery.

Reviews and Notices of Books.

PUBLIC HEALTH AND INSURANCE.

American Addresses by Sir ARTHUR NEWSHOLME, K.C.B., M.D., F.R.C.P. London: P. S. King and Son. Baltimore: The Johns Hopkins Press. 1920. Pp. 270. $2.50.

THE publication of these addresses, delivered in various American cities during 1919 by a man with the extensive experience of Sir Arthur Newsholme, is a matter of interest to a wide circle. In the first lecture, which reviews public health progress in England during the last 50 years, the author refers regretfully to the effect of perfunctory economic teaching, to the neglect of the public health side of the Poor-law organisation, and to the creation of independent local insurance committees, which he considers the greatest blunder of a National Insurance Act, "which was conceived ill-advisedly, had too short a gestation, and suffered a premature and forced delivery." In the second lecture there is a word of warning for eugenic enthusiasts. "Public health embraces some eugenic elements and may comprise more when eugenists have accumulated adequate non-fallacious evidence on which to base valid conclusions." In the same lecture there is also a much-needed defence of representative government and a plea for decentralisation. We cordially agree with Sir Arthur Newsholme that a central authority should not have to concern itself in minutiæ of local administration, but should devote itself to the larger general issues, and to raising the work of all local authorities to the same level of efficiency. Sir Arthur Newsholme has much to say about "the ad hoc vice," the need for the abolition of small and relatively inefficient local authorities and the creation of "complete local Parliaments dealing with all Governmental concerns." A considerable amount of space is also given to a discussion of the great need for an improved medical service, and of how the service should be built up.

The disadvantages of publishing in one volume a number of separate addresses are referred to in the preface; repetitions are unavoidable and are particularly noticeable in the statement of the case against the Insurance Act. Every lecture is of great interest, though perhaps Lecture VII.—The Obstacles to and Ideals of Health Progress—best illustrates the author's grasp of his subject. It seems unnecessary to predict that this volume will be widely read and to suggest that every student of sanitary or social reform will act wisely in making a careful study of its pages.

MANUAL OF MEDICAL JURISPRUDENCE AND TOXICOLOGY.

Fourth edition. BY W. G. AITCHISON ROBERTSON, M.D., F.R.C.P.E., F.R.S.E., Lecturer on Medical Jurisprudence and Public Health, School of Medicine, Royal College of Surgeons, Edinburgh. London: A. and C. Black. 1921. Pp. 414. 12*s*. 6*d*.

THAT Dr. Aitchison Robertson's manual should have gone through four editions since 1908 is alone proof of its recognised usefulness to students studying for examinations. In earlier editions public health has been included with medical jurisprudence and toxicology, but now it has been found more convenient to deal with public health separately. As it stands, the volume on medical jurisprudence and toxicology is packed with valuable matter in a condensed form. The author disclaims any intention to do more than instruct students without competing with the ampler text-books provided for practitioners and lawyers. In the circumstances it is natural that he should not cite authorities for all the varied information that he gives. However, for a writer who deals with legal topics, reference to authorities is a useful check. For example, Dr. Aitchison Robertson goes rather far in saying that when a defence of insanity is raised at the trial of a criminal charge the test is the power of the accused to control his actions. So far as England is concerned it is hardly true to say that what is known as the Rule in M'Naughton's case is obsolete. Many medical men have argued that it is capable of improvement, and juries have not always been induced to apply it strictly, but the change here, at any rate, has not gone further than that.

ANXIETY HYSTERIA.

Modern Views on Some Neuroses. By C. H. L. RIXON, M.D., M.R.C.S., Senior Neurologist, Ministry of Pensions Neurological Hospital, Exeter; and D. MATTHEW, M.C., M.B., Ch.B., Neurologist to the same hospital. With a Foreword by Colonel Sir A. LISLE WEBB, K.B.E., C.B., C.M.G., &c., Director-General of Medical Services, Ministry of Pensions. London: H. K. Lewis and Co. 1920. Pp. 124. 4*s*. 6*d*.

THE authors have written a little monograph on anxiety and conversion hysteria as seen by them in a wide experience of the neuroses of war. The book follows more or less didactically the common lines of psychopathology, symptomatology, diagnosis, and treatment, and if it contains no striking novelties (not, perhaps, that such are now to be expected) it embodies much sound and useful teaching. In particular, the diagrams given in the first of the above-mentioned sections are eminently calculated to enable the general practitioner to form a better idea than he is otherwise likely to get of the mechanisms concerned in the production of hysterical symptoms—i.e., the mental mechanisms. For while reference is duly made in the text to such physical symptoms as tremor, ocular symptoms, sweating, palpitation, vasomotor and pilomotor symptoms, &c., no attempt is made to explain the physiological mechanism of their production, important though this must obviously be, and no correlation of neuroglandular or neuronal disorder with psychological disorder is envisaged. We are, it is true, told that the vasomotor system is very liable to be unbalanced as the result of the emotional conflict, but in the symptomatology of hysteria there is more than a mere secondary effect on neuronal function of primary psychological disturbance. It is the peculiar nature of the disorders on the physiological level that calls for minute and unprejudiced investigation.

Taken as a whole, nevertheless, and considering the expressed aim of the book to be a guide for the general practitioner dealing with cases of hysteria on medical boards, we are of opinion it serves a useful purpose.

HYPNOTISM.

An Introduction to the Study of Hypnotism, Experimental and Therapeutic. Second edition. By H. E. WINGFIELD, M.A., M.D., B.C. Cantab., Consulting Physician, Royal Hants County Hospital. London: Baillière, Tindall, and Cox. 1920. Pp. 195. 7*s*. 6*d*.

THE second edition of Dr. Wingfield's introduction to the study of hypnotism should go far towards removing the prejudice still lurking in some quarters against the more general use of the procedure as a psychotherapeutic method of service in selected cases. Describing in simple and direct terms his exact technique, Dr. Wingfield substantiates his claim to enduring results in many instances by a series of brief clinical records, the value of which is undoubtedly increased by his candid admission of the limitations of the method and by his expressed unwillingness to hail in hypnotism a panacea for epilepsy, morphinism, dipsomania, stammering, and what not. Owing to the vogue of psycho-analysis as a therapeutic process hypnotism has perhaps somewhat fallen into the background; yet Dr. Wingfield's experience is that in the latter method lies a powerful factor in the unearthing of repressions supposedly accessible only to the former, and since psycho-analysis is in many cases practically an impossibility, more use might certainly be made of hypnotism. For a sane, cautious, and discretionary advocacy of the treatment of neurosis by suggestion with or without actual hypnotisation we can recommend the physician to turn to Dr. Wingfield's book.

NERVES AND THE MAN.

A Popular Psychological and Constructive Study of Nervous Breakdown. By W. CHARLES LOOSMORE, M.A., Brown Scholar at Glasgow University. London: John Murray. 1920. Pp. 234. 6*s*.

WE hope the day is far distant when the medical man will become so knowledgeable from the perpetual imbibition of strictly professional treatises that he will refuse to learn anything from those outside the pale of the Medical Register. As it is, there is, and has always been, a tendency to ignore contributions to therapy emanating from lay sources, doubtless because such are often characterised by one-sided presentation of the particular thesis advocated—a failing, however, not confined to non-professional contributions. The student of functional nervous disease, remembering that he must treat the whole man—body, soul, and spirit—and conscious that a knowledge of human nature is worth tons of text-book lore, will hail a kindred mind and appreciate innumerable therapeutic hints, no less valuable because not couched in technical language, as revealed in Mr. Loosmore's "Nerves and the Man." The management of the neuropathic individual is as onerous as his treatment, and none can manage others to whom his own mental trends, intellectual and affective, are as a sealed book. For ever treating others, the physician is too often forgetful of the old adage "Know thyself." A useful corrective is to be found in the slender volume under review, which we have perused with pleasure and profit no less for its literary garb and style than for the thread of sound common sense interwoven throughout. At critical periods in a man's life certain phrases, certain thoughts couched in an epigrammatic form, it may be, have proved often enough precious pegs on which to hang up his troubles, and though possibly Mr. Loosmore's "restful phrases" have more of a religious cast than certain others, the principle is absolutely sound. The reader will find a charm in scanning the pages of this little guide to self-knowledge and in applying to himself the wisdom gleaned from many fields and admirably set out by its author.

ANATOMY OF THE BRAIN AND SPINAL CORD.

Fifth edition. By RYLAND WHITAKER, B.A., M.B. Lond. Edinburgh: E. and S. Livingstone. 1921. Pp. 262. 12*s*. 6*d*.

WE welcome a new issue of a book which has always been a favourite with those who desire more than a purely superficial acquaintance with the intricacies of the central nervous system. This edition has been in part rewritten and rearranged by the author and makes a small volume of description easy to read and follow, with illustrations clear and good, if sometimes rather small. The main portion of the book is descriptive anatomy, and can be heartily recommended to the student. The last chapter deals shortly with development and is more in accordance with common form; here we would point out that the infundibulum is not to be described with strict accuracy as developing from the telencephalon. A slip of such sort, however, does not detract from the value of the book as an exposition of central nervous anatomy and arrangement, and it is from this point of view that we offer it welcome.

TEXT-BOOK OF EMBRYOLOGY.

Third edition, enlarged. By (the late) C. W. PRENTISS and LESLIE B. AREY. London and Philadelphia: W. B. Saunders Company. 1920. With 388 illustrations. Pp. 412. 27*s*. 6*d*.

THE Embryology of the late Professor Prentiss was a well-known book which, after his untimely death, passed into other hands for its second and third editions: in these hands it has more than retained its position among students in America. It deals with the development of the human, pig, and chick embryos from the laboratory and student's point of view, and gives clear and well-illustrated accounts of the processes. But, as we have had occasion to point out with reference to several works emanating from the other side of the Atlantic, the foundation is practically altogether German, and it may be said that embryology in England has gone beyond the level adopted in these works. We may add that one of the very few references in this book to English work is to the demonstration of the maturing human ovum by Professor A. Thomson, which is regarded as hardly conclusive. This is of course a matter of opinion, but those who had the good fortune to be present when Professor Thomson demonstrated his specimens will hardly agree with it. We say this in no spirit of rancour—the book is an excellent one, so far as it goes, but we do not consider that it goes far enough for English students. A meed of congratulation is due to the publishers for the way in which the volume is turned out.

PHYSICAL CHEMISTRY.

Praktikum der Physikalischen Chemie insbesondere der Kolloid-chemie. Für Mediziner und Biologen. Von Prof. Dr. med. LEONOR MICHAELIS. Berlin: Julius Springer. 1921. Mit 32 Text-abbildungen. Pp. vii. + 160. M.26.

THIS book contains a description of over 70 experiments in physical chemistry which Professor Michaelis has devised for his numerous pupils; they have been gradually evolved during the course of many years, partly in conjunction with his colleague, Professor P. Rona. The names of these authors are well known to all biochemists, and we have pleasure in recommending this volume to our readers, as the experiments will be found of value alike by the beginner and by the more advanced worker. Before each group of experiments there is a short explanatory section stating upon what principles the method depends or what is its importance in biology. The experiments are arranged methodically, though not always in accordance with the physical subject-matter. Thus, they begin with the simple "series" experiment of determining rennin and pepsin, and lead on, through colloidal precipitation, determination of hydrogen-ion concentration by means of indicators, surface-tension, diffusion, adsorption, to the measurement of electrical conductivity and electro-motive force. Every experiment is clearly and neatly described, the more complicated being greatly assisted by the many excellent diagrams of apparatus.

PHYSIOLOGY OF PROTEIN METABOLISM.

By E. P. CATHCART, M.D., D.Sc., F.R.S. (Monographs on Biochemistry.) London: Longmans, Green, and Co. 1921. Pp. 176. 12*s*. 6*d*.

THIS monograph, like all others in this excellent series, is an example of the best method of crystallising out what is really known from what is surmised. It deals with the digestion, absorption, and subsequent history of protein in relation to the economy of the body as a whole, and in relation to the physiology of starvation and work. Though some overlapping with Dr. R. H. A. Plimmer's monograph on the "Chemistry of the Proteins" is inevitable, the balance between the purely chemical and the biological is well preserved. The subject is one of peculiar intricacy. In its broadest outlines protein metabolism can no doubt be presented in an apparently simple and conclusive manner, but when we come to look a little deeply the simplicity vanishes. It is unfortunately true that few but professional physiologists are likely to appreciate this volume to the full, but the fault for this does not lie with its author. Even the chemistry of the proteins is a clear and well-explored domain when compared with the physiology of protein metabolism. But it must not be imagined that the subject is a dull one, or that Professor Cathcart has not dealt with it in a satisfactory way. Indeed, his own researches in this field qualify him to write with that clearness and vitality which pertain only to first-hand knowledge. Despite the vast amount of work which has been done since the days of Voit, there is as yet no unanimity of opinion on any of the

fundamental physiological questions of protein metabolism—for example, on the minimum protein requirement or the relations of protein to the energy needs of the body. The perusal of the present volume leaves us with a stronger impression than ever that we have now much information but little knowledge on the subject; doubts, unverified hypotheses, and unsolved problems cropping up on almost every page. An important object of these monographs is to consolidate our advances and to gain observation posts for future work. The author has admirably accomplished both of these aims. The large and up-to-date bibliography (25 pages) is a useful feature, but it should be pointed out that some at least of the references in the text are not to be found therein. One of these is to work done by Mrs. G. D. Cathcart.

SIX PAPERS BY LORD LISTER.

With a Short Biography and Explanatory Notes by Sir RICKMAN J. GODLEE, Bart. (Medical Classics Series.) London: John Bale, Sons, and Danielsson, Ltd. 1921. Pp. viii. + 194. 10*s*.

THIS little volume is one of a series dealing with "some of the most epoch-making contributions to medical science," published under the general editorship of Dr. Charles Singer. It is intended to follow this volume with others treating of Paré, Laennec, Auenbrugger, Hippocrates, and Galen. It is eminently fitting that the work of a man whose researches revolutionised surgery should lead the series, and we must congratulate Sir Rickman Godlee upon his illustrative selection and also for his biography, though there are naturally, as Sir Rickman Godlee confesses, many regrettable gaps. However, we have papers upon the Early Stages of Inflammation, on Anæsthetics, on a New Method of Treating Compound Fractures, a Demonstration of Antiseptic Surgery, on the Nature of Fermentation, and an address on the Present Position (1890) of Antiseptic Surgery, delivered before the International Medical Congress at Berlin. Of these papers the two upon Compound Fractures and upon Fermentation are perhaps the most interesting, and give a very good picture of Lister's patient way of working and of the honesty in which he always set forth his failures together with his successes; it is interesting, too, to compare the paper upon Fermentation (1877) with Tyndall's treatment of the same subject in 1876.[1] There is, by the way, what seems to us a somewhat misleading statement in a note (p. 95) to a passage in the paper on compound fractures—"Carbolic acid is almost absolutely insoluble in water," for the crystalline purified variety which is mentioned in the note is soluble in 1–14 of water at 56 F.

The collected edition of Lord Lister's papers is expensive and the selection now before us will help many who have neither the time nor the opportunity to read the full collection, to realise what manner of man Lister was, and how great is the debt which suffering humanity owes to his patient studies.

CHEMICAL PATHOLOGY.

Fourth edition. By H. GIDEON WELLS. London and Philadelphia: W. B. Saunders Company. 1920. Pp. 695. 35*s*.

THIS text-book has now reached its fourth edition, and has been revised and additional new matter incorporated without any serious increase in size. Dr. Wells gives a review of general pathology from the standpoint of the chemical processes involved. The importance of a knowledge of the chemical changes induced in various morbid anatomical states cannot be too fully emphasised. We know of no other book which really attempts to describe these changes with such a thorough review of the literature. For example, the well-known amyloid degeneration is described, including its chemistry, and the views which have been put forward as to its origin. If one refers to the book for information on such subjects as calcification, fat necrosis, the composition of exudates and transudates, or of gall-stones, a good account will be found, with abundant references to the literature.

The book can be recommended not only to the pathologist but to the student who is desirous of obtaining information on chemical pathology, and thus bridging the gap between his knowledge of chemical physiology and general pathology. It can also be recommended to the clinician, since in it he will find abundant information on the present state of our knowledge of the chemical changes induced in disease. The chapter on anaphylaxis is good; a difficult subject is clearly dealt with, modern views being discussed. The chapter on the chemistry of growth and repair, including as it does an excellent summary of our knowledge of deficiency diseases, and the part played by vitamines is also worthy of special mention. In passing we observe that Dr. Wells is inclined to regard pellagra as a deficiency disease, and it is therefore included in this chapter. The chapter on pathological pigmentation deals with the chemistry of pigments, a subject of absorbing interest, and the relations of the various pigments are here described. A good account of melanin and lipochromes will also be found in this chapter, as well as a description of blood pigments. The so-called toxæmias are exhaustively considered from the chemical point of view, and the physician will obtain much valuable information from a perusal of the book, particularly with regard to uræmia, the toxæmias of pregnancy, and acidosis and ketosis. The difficult and complex problem of intestinal toxæmia has attracted considerable attention amongst medical men; a large number of diseases have been ascribed thereto, and it is of interest that the advance of chemical knowledge tends to minimise the importance of this as a cause of disease.

Dr. Wells has produced a really excellent work which can be recommended to all interested in the subject of chemistry as applied to medicine, and for the mass of readable information and the copious references to the literature contained therein.

BOOKS FOR NURSES.

1. *Medicine for Nurses.* By JOHN HENDERSON, M.D., Ch.B., F.R.F.P.S. Glasg. London: Edward Arnold. 1921. Pp. 263. 8*s*. 6*d*.

ALTHOUGH Dr. Henderson's book should prove of undoubted value to nurse-students who prefer to study special books on the special departments of nursing, it cannot be said that it is a particularly useful addition to nursing literature, and the information it offers in no way excels that contained in any comprehensive text-book on general nursing. Dr. Henderson explains that care has been taken to select only essential material, but it must be realised that the finesse of nursing depends largely upon a full understanding of the details which underlie good technique, and although the nursing and treatment are given in conjunction with each disease, one could wish for a more graphic description of nursing methods. The subject-matter is well arranged, and specially commendable is the short introduction on surface anatomy to each class of disease. The book can be recommended to students who are under the close supervision of a ward sister or sister-tutor responsible for the correct application of the treatment prescribed.

2. *Bandages and Bandaging for Nurses.* By M. CORDELIA COWAN. London and Philadelphia: W. B. Saunders Company. 1920. With 139 illustrations. Pp. 177. 10*s*. 6*d*.

THE excellent illustrations which make up the greater part of Miss Cowan's book almost convince us that it may be possible to achieve success in the difficult art of bandaging without the aid of a demonstrator. So realistic are the reproductions of the methods employed that each step may be closely followed until the required result is reached. We congratulate Miss Cowan upon the concise and attractive form in which she has presented her subject, and regret only that the present price of her book may prevent many English student-nurses from purchasing it.

[1] Fragments of Science, vol. ii., p. 251.

THE MOTHER AND THE INFANT.

By EDITH V. ECKHARD. London: G. Bell and Sons, Ltd. 1921. Pp. 256. 6s. net.

THIS is a new volume of the Social Service Library, under the general editorship of C. R. Attlee. Miss Eckhard, who is a tutor in the Ratan Tata department of Social Science in the University of London, in conjunction with which the books in this series are published, has contributed an account of the aims and activities of the child-welfare movement, at least as far as these concern the child up to school age. Miss Eckhard points out how far the scope of voluntary organisations is enlarged by the growing activities of the State, and lays stress on the many ways in which a closer coöperation between these public and private bodies can be made effective. The main interest and value of the work, indeed, lie in the constructive and very practical suggestions scattered throughout its pages; and, though for many of the problems raised the author frankly acknowledges that there is no one solution, there is nothing vague or nebulous in the way in which the facts and the difficulties alike are faced.

The opening portion of the book describes the need for child-welfare work, and the growth of the movement from small and humble beginnings, the succeeding chapters dealing with the expectant mother, child-welfare centres, creches, day nurseries, and other organisations. There is a useful chapter on Workers and Training, in which is criticised the inadequate training, both theoretical and practical, allowed by the two years' course for health visitors; it must, indeed, be difficult to plan the time-tables in view of the wide range of subjects to be covered.

The book, as a whole, bears evidence of careful thought, and is one which will repay study by the social science worker of to-day.

THE LITERARY YEAR-BOOK, 1921.

London: Routledge and Sons, Ltd. Liverpool: Editorial Offices, 67, Dale-street. 8s. 6d.

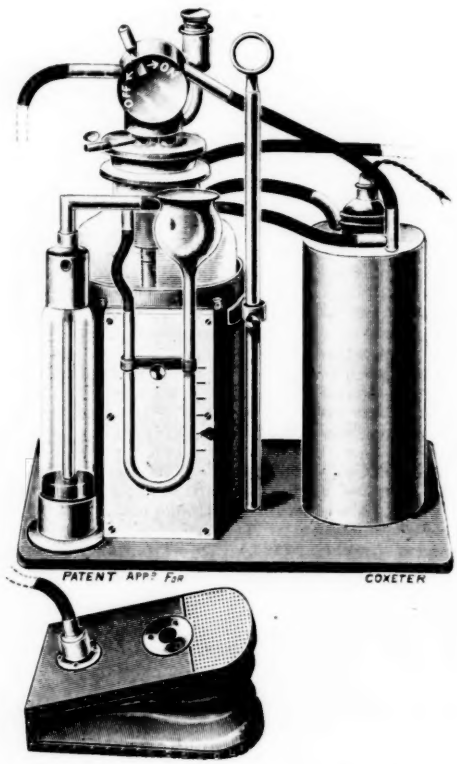
IN amount and arrangement of matter this issue is the best which has appeared. The Directory of Authors and Journalists, with a note on pseudonyms, occupies some 300 pages, and quantity of output must in such a work of reference determine to a considerable extent the amount of space allotted to each writer rather than his or her literary position. Mr. Thomas Hardy, Miss Marie Corelli, Mrs. Irene Osgood, and "Rita" tie with 15 lines apiece, and Sir Hall Caine and Mr. John Galsworthy with 14. Mr. Bernard Shaw does not detail his work, and fills only nine lines, while Sir Harry Johnston and Mr. E. V. Lucas each occupy 22. There are notable omissions, but it is impossible that this should be otherwise; everyone who writes is not an author, and when he may be said to become one defies definition. In a sense medicine has not, perhaps, been adequately noticed—neither Sir Clifford Allbutt nor Sir Almroth Wright are to be found in the directory, though the letters after the Poet Laureate's name serve to remind us that he is a medical man. The medical author, however, is an excellent example of the writer whose literary output is usually subservient to his proper calling. Our sympathies go out to the compiler of this list, who can have no arbitrary rules to guide him as to exclusion or inclusion.

Amongst the many features of general literary interest is a useful chapter on "Literary Property" contributed by Mr. G. H. Thring, the Secretary and Solicitor to the Society of Authors. This article embodies the experience and practice of years, and should have the desirable result of inspiring all who would enter into business arrangements with regard to the publication of their works to seek the advice of this Society. The chapters headed "Thoughts on Selling MSS.," "The Author as a Business Man," and "Some Hints for Contributors" are all valuable.

New Inventions.

A SIMPLE AND EFFICIENT INTRATRACHEAL ETHER APPARATUS.

THIS apparatus is simple in construction and gives a constant vapour of any strength at an even temperature. It may be worked with a foot-bellows, rotary pump, compressed air or oxygen as desired. As will be seen from the illustration the apparatus consists of: A light and specially constructed foot-bellows; a bottle to contain ether fitted with a new type of regulating valve; a water bath; a safety valve and manometer; and an electric or hot water heater. A filter packed lightly with cotton-wool is placed in the course of the tube leading from the bellows to the bottle which contains the ether.



The upper lever of the regulating valve diverts the air from the bellows *over* the surface of the ether or completely shuts it off. I have used this apparatus in a large number of cases of all sorts—e.g., removal of neoplasms of the neck, removal of tongue, upper jaw, &c., and it has proved itself to be efficient. The apparatus can be equally well used for the administration of intratracheal chloroform.

Messrs. Coxeter and Son, 171, Pancras-road, N.W.1, to whom I am indebted for many helpful suggestions with regard to mechanical difficulties and also for making a light and efficient pair of foot-bellows, are the wholesale makers of the apparatus.

A. W. MATTHEW, M.R.C.S., L.R.C.P. Lond.,
London, W. Anæsthetist to St. Mary's Hospital.

THE King has granted unrestricted permission to Mr. A. A. Miller, L.R.C.P. Lond., M.R.C.S., to wear the Cross of the Chevalier of the Legion of Honour, conferred upon him by the President of the French Republic in recognition of services to the French sick and wounded in the late war.

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of

Professor CHARLES ACHARD, PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY OF PARIS. AND Dr. CHARLES FLANDIN, D.S.O., CHEF DE CLINIQUE A LA FACULTÉ DE PARIS.

OCULAR TRAUMATISM AND MENINGITIS.[1]

BY PROFESSOR F. DE LAPERSONNE.

THE following is a summarised account of a case of acute meningitis following an infected wound of the eye, seen at the Ophthalmological Clinic of the Hôtel-Dieu, Paris.

Patient, a boy, aged 13, was wounded in the right eye by broken glass on Oct. 9th, 1920. An oculist, consulted on the 11th, reported a penetrating wound of the cornea, with hypopyon. On the 19th the patient was sent to the Hôtel-Dieu and admitted as an urgent case; upon examination we found panophthalmia with yellowish cornea and chemosis. Movements of eyeball limited; temperature 38° C.; headache and excitement. Exenteration was immediately performed, with local anæsthesia, by Dr. Velter, chef de clinique. Complete curettage, followed by thermo-cauterisation of the orbit, brought away the whole of the membrane and masses of purulent matter. On the same day the temperature rose and remained at 40° C. until the following day. On the 21st it fell to 37° C., and 3 c.cm. of Delbet's serum was injected. On the 22nd temperature again rose; there was stiffness of the nape of the neck, and Kernig's sign, but no vomiting or headache. Lumbar puncture gave a doubtful liquid. An intravenous injection of 20 c.cm. of electrargol was given.

On the 23rd the nervous symptoms were less evident, the patient was calmer and more sane; temperature was 38·2° C. On the 24th further injections of Delbet's serum and electrargol were given. On the 25th the meningeal symptoms were accentuated; the occipital headache was intense, with great excitement, nocturnal cries, Kernig's sign; temperature 40·2° C., pulse uncountable. Pupil of unaffected (left) eye dilated; papillary stasis present. Another lumbar puncture was made. Injections of electrargol and Delbet's serum were continued; on the 29th an injection of antimeningococcal serum was given. Lumbar puncture gave a liquid distinctly cloudy and hypertensive. The temperature remained above 39° C.; the patient died on Oct. 31st, three weeks after the injury and 12 days after the operation.

Examination of cerebro-spinal fluid.—The first and second lumbar punctures showed abundant polynucleosis, but direct examination revealed no bacterial elements. The third puncture showed considerable polynucleosis with numerous pneumococci, presenting their characteristic aspect of diplococci encapsuled and Gram-positive. There was no question of meningococci, which have a different morphological character and are Gram-negative. Cultures from the fluid obtained by anterior puncture gave pure pneumococci.

Autopsy.—The exenterated ocular cavity was perfectly empty, there being no choroidal debris. The orbit contained neither purulent infiltration nor any foreign body. A generalised meningeal congestion was observed, with hæmorrhagic pachymeningitic plaques. The arachnoid cavities were filled with a muco-purulent fibrinous mass. The base of the skull was especially involved; the median fossa was covered with thick greenish-yellow pus, which had spread over the entire anterior arachnoid membrane, and traces of which had reached the anterior fossa and even the cerebellar fossa. The sinuses of the dura mater were intact.

Simple and Complicated Injuries of the Eye.

Meningeal affections following ocular or oculo-orbital injuries are rare, but very serious. War ophthalmology has given relatively numerous examples of traumatic meningo-encephalitis caused by oculo-orbital injury. Not only the eye was involved; the vulnerant agent had produced an oculo-orbital wound, with direct fracture of the base of the skull in the anterior fossa and with discharge of cerebro-spinal fluid. We have observed 12 cases of meningo-encephalitis amongst 1500 wounded treated in the ophthalmological department of the Hôtel-Dieu, and were able to distinguish the following four varieties.

1. Very acute form. The patients reached us very quickly, but were already in a manifestly meningitic condition. They rapidly became delirious or comatose and died in less than 48 hours.

2. Ordinary form, with stiffness of back of neck, Kernig's sign, excitement, and fever. Cerebro-spinal fluid cloudy; death within ten days.

3. Slow form, lasting three weeks, with very irregular thermic curve, and periods of excitement and quiet. The cerebro-spinal fluid filtered more or less intermittently through the wound; its issue sometimes coincided with a partial remission of symptoms. This fluid, clear or mixed with pus or blood, had an ammoniacal odour. The condition produces progressive enfeeblement and terminates in death.

4. Form admitting of cure. Certain patients were cured in spite of very grave injuries. In the case of one of our blinded men a bullet had destroyed the contents of both orbits and the root of the nose. Cerebro-spinal fluid flowed from this large wound, in which the cerebral pulsation was visible. After a period of great danger the patient developed mental disturbances for some months. We have lately seen him in good health.

Simple penetrating wounds limited to the eyeball can also produce meningeal disturbance. Several observations have been published upon this subject. In 1897 I presented to the Société Française d'Ophtalmologie the following summarised account of a case resembling in every way that reported at the beginning of this paper.

A child, aged 12, was wounded in the cornea by a blow with a pair of scissors. On the fifth day very painful iridocyclitis was observed, with headache and excitement. Classical enucleation was performed on the sixth day; incision of the eyeball revealed a purulent iridocyclitis with involvement of the vitreum. The child remained in an excited condition and headache persisted. The third day after operation the temperature rose to 40° C., with severe headache, vomiting, delirium, and stiffness of the nucha. Death occurred on the tenth day after intervention.

Autopsy.—Suppurating meningitis was revealed, only slight at the convexity, but forming at the base a thick greenish yellow exudate, extending from the medulla oblongata to the optic chiasma. Bacteriological examination demonstrated the existence of pneumococci, with no associated organisms, in the meningeal pus and in the sheath of the optic nerve. The sinuses of the dura mater presented no alteration.

Kalt has published accounts of two cases of pneumococcal meningitis following operation (one a child suffering from orbital sarcoma with corneal ulceration, the other a man of 60, enucleated for purulent iridocyclitis). These conditions must be distinguished from thrombo-phlebitis of the orbital veins and of the cavernous sinus. We have lately observed the following case:—

On Nov. 3rd a man, aged 40, was admitted to the Hôtel-Dieu as an urgent case, with a temperature of 40·6° C. and delirium. He presented, on the same side as iridocyclitis of long standing, orbital cellulitis with palpebral œdema, exophthalmia, and papillary stasis. After 48 hours the same symptoms were observed on the other side. Thrombophlebitis of the orbital veins and of the cavernous sinus had attacked the other side by way of the coronary sinus. The cerebro-spinal fluid showed abundant polynucleosis. The patient died four days after his admission to hospital.

Pathogenic Agency of the Pneumococcus.

The pneumococcus is the pathogenic agent of meningitis following infected wounds of the eye. Since 1897, at the Société Française d'Ophtalmologie—i.e., in the thesis of my pupil Painblan (Lille, 1897), and in a lecture delivered at the Hôtel-Dieu (*Presse Médicale*, 1901)—I have insisted on the part played in these complications by the pneumococcus. In Germany, a year before my first communication—i.e., in 1896—Zimmermann had reported, in a case of meningitis following enucleation, the presence of "undifferentiated

[1] A lecture delivered at the Ophthalmological Clinic, Hôtel-Dieu, Paris.

cocci." The pneumococcus, however, has been recognised since Talamon and Fraenkel. My colleague, Calmette, Director of the Pasteur Institute at Lille, and I attempted at that time to produce the same phenomena experimentally.

Our results with rabbits were as follows: (1) Section of optic nerve; injection into sheath of nerve of a drop of only slightly virulent pneumococcal culture; death, due to generalised infection, in 10 days. (2) Inoculation into anterior chamber with a strong pneumococcal culture; death in two days, due to pneumococcal toxæmia.

In these two cases we did not find orbital or meningeal suppuration, but we proved the presence of the pneumococcus in the optic nerve-sheath, at the level of the optic chiasm, and at the base of the brain.

The pneumococcus often exists as a saprophyte in the conjunctival culs-de-sac and in the lacrymatory canals without causing the slightest inflammation; but it is also often pathogenic, producing conjunctivitis of the new-born and corneal ulcer with hypopyon, and when penetrating injury of the eye takes place it frequently begins to cultivate, and may produce meningitis. Our two observations concern children of 12 and 13 years of age, but analogous adult cases have been reported. Must we assume that a process of anaphylaxis takes place—that after a former pneumococcal infection the system is specially sensitised for the pneumococcus? In any case this micro-organism is a redoubtable enemy.

Method of Treatment.

Experiments in vitro show that certain antiseptic solutions (the mercuric salts, such as sublimate, for instance) do not penetrate the enveloping capsule of the pneumococcus. Lavages, and even subconjunctival injections, of sublimate or cyanide probably have no action, since ocular infection depends upon the pneumococcus. Alkaline substances dissolve the capsule and prevent the pneumococcus culture from spreading. Since 1897 I have used hyperchlorite of calcium, but I have had to stop using it, because it sets up irritation of the conjunctiva. The hypochlorites again came into use during the war (Carrel's method, with Dakin's fluid), and I myself in 1917 advised the employment of chloramine in 1 per cent. solution, for oculo-orbital war injuries.

In the presence of a penetrating injury of eyeball or orbit success depends essentially on rapidity of diagnosis and treatment. The patient should be carefully and quickly examined with use of radiography or radioscopy. Intervention should follow rapidly—less than 24 hours after the injury. My pupils, Duverger and Velter, in their work "Ophtalmologie de Guerre," have detailed the rules of rapid treatment, which treatment is essentially conservative. But in the presence of an acknowledged panophthalmia, all delay is dangerous; here the eye is painful, definitely lost for purposes of sight, and likely to induce grave complications. The surgeon must choose between enucleation and exenteration. In 1884, de Graefe, after the death of two of his cases of panophthalmia, insisted upon simple evisceration in preference to enucleation. In 1889, an interesting discussion on this question was held at the Société Française d'Ophtalmologie; Panas and Gayer preferred enucleation, but the former afterwards adopted exenteration with the cautery, which I advocated in 1892 for all cases of panophthalmia.

Exenteration has this great advantage over enucleation: the sheath of the optic nerve is not thereby opened and infected. At the International Congress of Medicine held in Paris in 1900 Pflüger, Snellen, de Schweinitz, and Swanzy presented reports on "Enucleation and suggested operations to replace it." Agreement between them was not complete. Moreover, the total statistics from 1861 to 1896 of Moorfields Hospital showed seven cases of death in 6876 enucleations. It must be noted, however, that these 6876 cases were not all of panophthalmia, and that the seven deaths all followed panophthalmia. In 1908 Albert Terson, in a report on the Treatment of Wounds of the Eye, declared that "exenteration with the cautery as advised by Lapersonne should be accepted as the least dangerous and most efficacious operation against panophthalmia." Antonelli made certain reservations in connexion with sympathetic ophthalmia, but sympathetic ophthalmia is not to be feared in panophthalmia; what is to be feared is plastic iridocyclitis. In 1912 Jacqueau, of Lyons, recorded a case of panophthalmia consequent upon a penetrating wound, in which enucleation was followed by death.

Conclusion.

At the present time exenteration with the cautery is practised by the majority of ophthalmologists. Consideration of the case recorded at the outset of this lecture does not point to contra-indications, for it is clear that the meningeal affections existed before the operation.

I am convinced that exenteration with the cautery is demanded by the indications I have detailed. It is the only treatment for acute panophthalmia following a penetrating accidental or surgical wound of the eye, with infiltration of Tenon's capsule, chemosis, and threatened orbital cellulitis. But if fever, headache, and other symptoms are already in evidence, the prognosis must clearly be made with reservations as to meningeal complication.

CORNEAL ANÆSTHESIA

INDUCED BY LESIONS OF THE TRIGEMINUS.

BY CH. COUTELA,

OPHTHALMOLOGIST TO THE PARIS HOSPITALS;

AND

A. MONBRUN,

HEAD OF THE OPHTHALMOLOGICAL LABORATORY, HÔTEL-DIEU, PARIS.

CORNEAL anæsthesia may exist in an isolated condition and may pass unobserved, but more often it forms part of a neuro-ocular syndrome—neuro-paralytic keratitis, ablation of the Gasserian ganglion, fracture of the base of the skull, ophthalmic herpes, neuralgic herpes of the cornea, or kerato-malacia. It is nearly always connected with a lesion of the Gasserian ganglion. The ophthalmic nerve, its nasal branch, the ophthalmic ganglion, or the ciliary nerves can, however, be directly reached. Sometimes it is connected with a lesion of the root of the trigeminus, or of a protuberant lesion (alternate hemianæsthesia), or of a cerebral lesion (hemianæsthesia).

Isolated Corneal Anæsthesia.

This condition may exist unobserved, but if a minimal corneal injury takes place or an operation on the eye is performed it may be the beginning of neuro-paralytic keratitis. In order to avoid serious complications it is well to pay strict attention to the sensibility of the cornea. We shall shortly refer to a case of fracture of the skull in which a very slight traumatic conjunctival keratitis ended in necrosis of the cornea with panophthalmia. The corneal anæsthesia had not been dealt with sufficiently early.

Corneal Anæsthesia and Operation for Cataract.

In four of our cases operated upon for cataract complications developed: and only the accident of these complications enabled us to discover corneal anæsthesia in the eye operated upon, an anæsthesia also existing in the other eye. A brief record of these four cases follows:—

CASE 1.—Complete bilateral cataract; aged 88. Nothing to report. On Jan. 23rd, 1920, extraction of the cataract of the left eye, with iridectomy and suture of the cornea. Cicatrisation of the corneal incision only took place after five weeks; no pain. No other complications, except an intense oblique astigmatism, reducing vision to 6/60.

CASE 2.—Complete bilateral cataract. Nothing to report. Right eye: extraction with iridectomy, without suture; incomplete coaptation of corneal incision for more than three weeks. Interstitial opacification of superior part of cornea.

CASE 3.—Female, aged 58, alcoholic. Lacrymal ducts impermeable, but not infected. Complete bilateral cataract. On Dec. 6th, 1919, preparatory iridectomy of right eye. On July 3rd, 1920, extraction of cataract and suture of cornea.

Incomplete coaptation of corneal incision. Iridocyclitis with hypopyon, atrophy of eyeball. No pain. Corneal cicatrisation only complete after six weeks.

CASE 4.—Female, aged 64. Left eye operated upon for cataract in 1916, with no complications. Right eye: complete cataract. Former involuntary lacrymation, but the injection was well taken, and there was no conjunctival reaction. On Oct. 7th, 1920, extraction of the cataract with iridectomy and suture of cornea; incomplete coaptation of incision. Iridocyclitis without pain, hypopyon, then panophthalmia, necessitating exenteration.

There is no reason to attribute the corneal anæsthesia to our intervention. In his thesis on "Corneal Sensibility" (Paris, 1908) Cerise showed that "it is always on the cicatrice itself that sensibility returns in the first place," and that the corneal portion rapidly regains its innervation. In our four cases complete and persistent anæsthesia was present extending over the whole cornea not only of the eye operated upon but also of the other eye. This insensibility was evidently present before the operation, and caused delay of cicatrisation. The first case had no troublesome sequel; the second was complicated by corneal opacity. In the third and fourth cases incomplete cicatrisation of the incision facilitated septic endo-ocular complications (atrophic iridocyclitis, panophthalmia) due to the defective condition of the lacrymal ducts. To sum up—before operating on cataract it seems to us of value to complete the examination of the condition by testing the corneal sensibility.

Neuro-paralytic Keratitis and Extension of Anæsthesia into the Trigeminal Tract.

It is evident that anæsthesia of the whole trigeminal tract can only be induced by a Gasserian or retro-Gasserian affection. When the anæsthesia only affects the tract of the ophthalmic nerve the lesion is seated behind the orbit or at the level of the Gasserian ganglion. We have observed in our present work under Professor F. de Lapersonne a neuro-paralytic keratitis with anæsthesia of the ophthalmic nerve and hemicrania, very probably connected with an endo-cranial neoformation of the region of the Gasserian ganglion. The anæsthesia is often limited to the cornea and to the conjunctiva, and more often still to the conjunctiva alone. The lesion may be in front of the Gasserian ganglion, and sometimes at the level of the ciliary nerves themselves (orbital affection), but almost always it is a lesion of the Gasserian ganglion itself. And in that case, how can we explain affection of corneal sensibility when cutaneous sensibility remains unaffected? It would be interesting to know if this greater vulnerability of the fibres supplying the cornea is due to the disposition of their course across the Gasserian tract. Another hypothesis appears equally admissible: the very special sensibility of the cornea would be more easily modified than that of the skin.

The skin reacts in three forms of sensibility, unlike the cornea. Corneal sensibility to pain is very great; corneal sensibility to contact, denied by the majority of writers, is ill-defined; it requires separation of the points of Weber's compass by more than 5 mm. Corneal sensibility to heat is a disputed question; a current of hot air produces a sensation of cold. However it may be, neuro-paralytic keratitis is oftenest induced by a lesion of the Gasserian ganglion, even when the cutaneous sensibility of the trigeminus is intact.

Neuro-Paralytic Keratitis and the Surgery of the Gasserian Ganglion.

Everyone is aware of the gravity of neuro-paralytic keratitis following resection of the ganglion. To avoid this dangerous complication, certain writers have advised the substitution for this operation of retro-Gasserian section of the trigeminus. For Sicard[1] "section of the root, whilst leading to cure of neuralgia, gives shelter to neuro-paralytic complications." We have, however, just observed a case of neuro-paralytic keratitis following retro-Gasserian neurotomy.

[1] Société de Neurologie, June, 1920.

CASE 5.—Female, aged 36, who had suffered for 12 years from trigeminal neuralgia, resisting all treatment. On August 2nd, 1920, Dr. de Martel performed retro-Gasserian neurotomy on her; anæsthesia of cornea and conjunctiva and of the trigeminal tract. Two months after the operation neuro-paralytic keratitis developed with ulceration of the nasal membrane and of the wing of the nostril. Tarsorrhaphy arrested the evolution of the corneal ulceration, and the latter disappeared, leaving several opacities. Absolute corneal anæsthesia persisted.

Neuro-paralytic Keratitis and Traumatism of the Skull.

In the presence of cranial traumatism corneal anæsthesia is a symptom to be looked for. It indicates a lesion of the base and makes it possible to avoid ocular complications.

CASE 6.—Male, wounded Nov. 3rd, 1917, by several fragments of shell. Wounds of limbs and "non-penetrating injury of the left temporal region. Shell splinter extracted from the soft portion"; ordinary traumatic kerato-conjunctivitis, with slight epithelial erosion of the cornea. On Nov. 13th a vast central ulcer was observed, with total corneal anæsthesia and hypopyon; no pain. On the 26th panophthalmia; exenteration. To sum up—a radiating fracture of base of skull, with probable involvement of Gasserian ganglion. If corneal anæsthesia had been discovered in time tarsorrhaphy would, perhaps, have preserved the eye.

Neuro-paralytic Keratitis and Meningeal Reactions.

All bony, meningeal or encephalic lesions involving the Gasserian region can induce neuro-paralytic meningitis. Syphilis occupies the chief place in this ætiology. But it must be realised that the meningeal reactions so frequently observed during certain general or epidemic affections may be accompanied by corneal anæsthesia with neuro-paralytic complications.

Neuro-paralytic Influenzal Keratitis.

During the 1918–1919 epidemic we observed 24 cases of neuro-paralytic keratitis in patients suffering from influenza.[2] This manifestation was accompanied by pains in the trigeminal tract on the same side, with headache. In cases where lumbar puncture was performed we found very distinct albuminosis and lymphocytosis.

Corneal lesions have a polycyclic contour, as in corneal herpes. One of our cases presented numerous vesicles, analogous to those of herpes zoster, on the upper eyelid.

Keratomalacia.

This condition should be put in the same class with neuro-paralytic keratitis; it ends in perforation of the cornea, whilst the symptoms of reaction are only slightly marked. Keratomalacia is generally followed by death. Anatomical and pathological reports have made clear the meningo-encephalic nature of this disease, which attacks very young, premature, or weakly children.

Herpes of the Cornea.

Neuralgic herpes of the cornea is accompanied by painful symptoms in the trigeminal region and by hypoæsthesia, or even anæsthesia, of the cornea. We have just seen that certain meningeal conditions produce an analogous syndrome. The corneal lesions of neuro-paralytic influenzal keratitis, with polycyclic contours, for example, are absolutely identical with those of corneal herpes. On the other hand, the corneal anæsthesia of herpes zoster is also accompanied by vesicular eruption, the ulceration of which assumes a polycyclic form. It would be of interest to examine the cerebro-spinal fluid of patients suffering from neuralgic herpes of the cornea. This disease is doubtless connected with a slight affection of the Gasserian ganglion, allied to a defective condition of the meninges.

Ophthalmic Herpes.

In herpes zoster corneal anæsthesia is to be expected. The vesicular eruption rapidly assumes a polycyclic shape. Furthermore, herpes zoster is characterised by painful phenomena, to which we shall return later.

Basing their data on a series of 21 cases of thoracic herpes zoster, with autopsy, Head and Campbell have shown that the condition is one of inflammatory and hæmorrhagic lesions situate at the levels of the spinal ganglia. This theory, reserved at first for spinal herpes

[2] Monbrun, A.: Archives d'ophtalmologie, August, 1919.

zoster, must be extended to cover facial herpes. André Thomas and Henyer found the same type of inflammatory and hæmorrhagic lesions at the level of the Gasserian ganglion.[3]

Herpes zoster is very often accompanied by cerebro-spinal fluid reactions—lymphocytosis and albuminosis. We have always noticed this fact in the numerous cases we have studied under Professor de Lapersonne. Certain types of herpes zoster are perhaps due to an undetermined infection, "epidemic, non-relapsing, and contagious," as claimed by Landouzy. But very different diseases may induce herpes zoster—syphilis, tuberculosis, pneumonia, eruptive fevers, influenza, typhoid, diphtheria. MM. Achard and Laubry, Pautrier and Clement Simon, have seen it following spinal anæsthesia. It is known that the arachnoid and the pia mater are inserted in the dural cavity of the Gasserian ganglion, and that the latter is directly connected with the cerebro-spinal fluid. Herpes zoster is induced by a meningo-Gasserian lesion. And it is the affection of the Gasserian ganglion which produces corneal anæsthesia and the symptoms common to herpes zoster, to neuro-paralytic keratitis, and to certain forms of corneal herpes.

Painful Anæsthesia of the Trigeminus.

Herpes zoster, neuralgic herpes, and certain forms of neuro-paralytic keratitis are accompanied by neuralgia in the trigeminal region; these painful phenomena are to be contrasted with anæsthesia of the tegument. It is interesting to study this dissociation of the objective and subjective sensibility of the trigeminus. Moreover, the trigeminus contains sympathetic fibres of the cerebro-spinal system. Some of these sympathetic fibres lead directly to the branches of the trigeminus, others to the Gasserian ganglion (sympathetic Gasserian nerve fibres of François Franck).

In 1916 one of the writers investigated pains of the trigeminal tract of causalgic type due to "alteration of the sympathetic in certain wounds of the eye and orbit."[4] One of our wounded cases presented at the same time a complete anæsthesia of the whole trigeminal tract. Herpes zoster completely effects this painful anæsthesia. We know that Déjerine and Thomas, and Head and Campbell, attribute a certain importance to the sympathetic in intercostal herpes zoster. In 1919 Sicard, Roger, and Vernet insisted upon the rôle of the sympathetic and upon the causalgic character of the pains of herpes zoster. We consider that in herpes zoster, neuralgic herpes, and certain forms of neuroparalytic keratitis a Gasserian lesion attacks at the same time the true nerve-fibres of the trigeminus, producing anæsthesia of the tegument, and its sympathetic nerve-fibres, causing pain.

This theory is important from the point of view of surgery of the Gasserian ganglion. Resection of the ganglion and retro-Gasserian radicotomy anæsthetise the tegument innervated by the trigeminus, too often producing neuro-paralytic keratitis, but they do not always cure facial neuralgia, since the attachment of the sympathetic to the trigeminus is partly at the level of the ganglion and partly below it.

[3] Société de Neurologie, 1912.
[4] Monbrun, A.: Archives d'ophtalmologie, May, 1916.

LACK OF LAUNDRIES IN PARIS.

(FROM A FREQUENT PARIS CORRESPONDENT.)

THE annual fête day of the Paris washerwomen has gone by—it used to coincide with the Mid-Lent Carnival—when the Queen of Beauty is elected to preside over the rejoicings, being chosen among the laundresses. But modern industrialism, steam-laundries, the high price of coal, and the general circumstances of life prevalent in Paris have played havoc with an ancient and picturesque custom. There was a time when the Seine sufficed for the washing of Paris linen, and nothing can be better or more natural than to wash clothes in running water and hang them out to dry in the open air and sunshine, so long as such treatment of the river does not affect its value for the community in other ways. There are little recesses on the banks of the Seine where for centuries the laundress of Paris earned her living free from rent. During the reign of Louis XV. a man named Marie obtained permission to instal a houseboat near the Pont Louis XV., so constructed as to serve for a laundry. Here, in a sheltered partition, each laundress could wash her goods in the running water, and it was her habit, when the season allowed, to wear flowers. The presence of so many women, sometimes gaily bedecked with flowers, gave animation to the banks of the Seine; and, as they were washing close together, the Queen of Beauty could be more easily selected among them than if they had been engaged on some other occupation.

The Passing of the Houseboat Laundry.

Time, however, wiped these mediæval pictures off the canvas. Paris spread out and the river ceased to be the centre of the city. The houseboat laundries, which had become very numerous, decreased in numbers, and by 1849 only 80 remained, and a Parliamentary Committee was appointed to inquire into them and the whole laundry situation of the city. The reporter for the committee, Mr. Armand, argued that dirty linen was a cause of disease and that the fact of its existence was a symptom of laziness and, if not overcome, of moral decadence. But as a consequence it was decided to build baths and washhouses in districts that were some distance from the Seine, for in all parts of the town there would be linen to wash. The first of these new washhouses was constructed in the old insalubrious quarter of the Temple. It was called the Bain Lavoir Napoléon and was opened in 1853. As these establishments increased in number, the houseboat laundries, such as were left, disappeared one by one; their picturesque features had largely gone before. When the danger had thus ceased to exist a scare was started that the Seine was contaminated by the dirty linen, but by that time the sewers, or the overflow from the sewers, were in operation as real dangers. It was decided that no new floating laundries should be allowed, and to-day there only remain three or four which are in the last stage of decrepitude and cannot float much longer. The days of the laundry-boat are numbered and a popular feature of Paris life is fading away. What is more serious far is the fact that the other laundries are also disappearing, the picturesqueness which supported the boats being absent from the washhouses.

A Substitute Must be Found.

Yet Paris must wash its dirty linen. Before the war there were 350 public washhouses; but the space they occupied is now wanted for new offices, warehouses, banks, and even kinemas. Already 184 washhouses have been abolished. It must be borne in mind that in the tenement-houses and flats of Paris there are no conveniences for washing, no boiler, no little back garden or yard where the linen can be hung to dry. The housewife takes her linen to the public washhouse and pays a small sum for the necessary accommodation to wash it. The majority of families have not the means to give their linen to laundries: they must wash at least a considerable part of it themselves. The large steam-laundries that take in the linen of families and hotels are established in the outskirts of Paris, notably at Boulogne, where they have the necessary room, and with a motor-car carry the linen to and from town, manage very well. But the charges made are ruinous to all but the wealthy. If the poor and persons of moderate means cannot get their linen washed on reasonable terms, public health must suffer. But if the Mid-Lent Carnival has this year so far forgotten its traditions as to select for its Queen of Beauty a typist instead of a washerwoman, that is no reason why public attention should not be called to this public grievance. Some remedy may then be found, and the festival will have served a good purpose.

THE LANCET.

LONDON: SATURDAY, APRIL 2, 1921.

The Action of X Rays on Living Tissues.

IN some respects it may be said that the general physiological effects of X rays have not received the experimental study that they merit. It is only natural that in the treatment of disease by these rays attention has been focussed upon the affected structures, the careful observation of which, combined with experimental investigation, has resulted in a very large number of facts being ascertained. The microscopic findings, indeed, form a separate branch of pathology which may conveniently be included in the term radio-pathology. Such detailed studies have provided a basis for a rational interpretation of the various processes by which a malignant tumour, when irradiated in vivo, may be arrested in its growth, diminish in size, and possibly disappear in the course of time. It is, however, unlikely that this sequence of changes occurs simply as a result of the irradiation which the tumour cells have undergone, for the normal tissues of the host also share to some extent in the exposure to the rays. The nature of this physiological reaction will largely depend on the conditions under which the irradiation is carried out. In our present issue an account of some experimental studies is given by Dr. IVAN I. MANOUKHIN. The author has come to the conclusion that as a result of exposing the spleen to X rays leucocytolysins are set free in the blood. The action of such bodies, as their name indicates, is to effect a solution of the leucocytes, a process which the author looks upon as a necessary step in the successful combat of certain diseases in the body. The experimental basis of this work was provided by monkeys and guinea-pigs, and Dr. MANOUKHIN satisfied himself that subsequent to an exposure of the spleen to X rays the blood shows an increased content of bacteriolysins, agglutinins, and other antibodies.

Starting from this basis Dr. MANOUKHIN carried out a large amount of therapeutic work in cases of tuberculosis, tetanus, typhoid, and other diseases, the main feature of such treatment being the irradiation of the spleens of the patients. An important supplement to this treatment is mentioned by the author; 10 minutes after the X rays are given blood is obtained from the patients, and the serum from this is readministered to them in the form of gelatin capsules. The line of investigation seems one of considerable importance, and will probably stimulate further inquiry into the physiological processes which occur among the various organs of the body after irradiation. Since 1903, when SENN drew attention to the direct effect of X rays upon the spleen in cases of leukæmia, a great deal of work has been done upon the blood changes which occur in animals after exposure to X rays. The researches of AUBERTIN and BEAUJARD in 1908 upon guinea-pigs stand out as one of the most important of the early contributions to the subject; they came to the conclusion that not only are the circulatory elements of the blood affected by the rays, but that some disturbance is produced in the bone-marrow. They found that a medium dose of X rays caused a condition of hyper-activity of the bone-marrow which was the more accentuated the more marked the decrease in the leucocyte content of the blood.

Recent observations by Dr. J. C. MOTTRAM have shown that individuals who have been exposed to repeated small doses of the penetrating gamma rays suffer a serious diminution not only in their circulating leucocytes but also in their red cells. In extreme cases he showed that this may result in an aplastic pernicious anæmia. Last week we reported the untimely and tragic death of Dr. IRONSIDE BRUCE, who has fallen a victim to a blood disease of the above kind. It can only be surmised that, during the course of his radiological work, in alleviating the suffering of others Dr. BRUCE received fractional doses of radiation, the effects of which manifested themselves with startling suddenness; for he died after only a brief illness. Such an event may cause apprehension among radiologists generally. The dangers attending the use of X rays are only now being fully revealed, and it is recognised that these fall into two categories: the superficial damage to the skin caused by the softer types of X rays resulting in dermatitis or still graver conditions; and the damage to the deeper structures, including the blood-forming organs, caused by the more penetrating types of X rays and the gamma rays from radio-active substances. It must be admitted that the conditions under which a great deal of the radiological work of the country is done at present are of an exacting nature. The main factors detrimental to the health of operators appear to be (1) fractional doses of the rays they are using, owing to insufficient protection; (2) the fouling of the atmosphere due to high tension discharges and bad ventilation; and (3) the necessity for a number of hours per day being spent in the dark room. The difficulties of providing adequate safeguards to health under the varied conditions of radiographic and radiotherapeutic work are considerable, but certainly not insurmountable, and we look with confidence to radiologists to overcome these difficulties, so that the practice of radiology may continue under a regime in which the personal safety of the operator has been made the subject of scientific investigation. To initiate such a regime was, we understand, Dr. BRUCE'S earnest wish, and its inauguration would be the most fitting memorial to his life-work.

Hospital Administration: A Test Case.

IT should be a great help to the quiet solution of the problems of hospital administration throughout the country to have them worked out on the stage in the lime-light and with a full orchestra. For this reason we may all be thankful to Bradford. There everything has conspired to produce a dramatic effect; last of all the Boundary Extension Inquiry, which has given a fine opportunity to representative health officers of other sanitary districts to say what they think of municipal health administration as judged by its results in the county borough of Bradford. The city, said one, was badly scavenged and had a persistently high infant mortality rate; the chances of prospective mothers dying in childbirth, said another, were twice as great at Bradford as anywhere else in the West Riding, largely owing to filthy homes. We quote the

harsh statements apart from their context, as has been done widely in the daily press, but without endorsing their conclusions. Cause and effect are not always easy to trace in health matters, and we have a questionable precedent supplied by the Minister of Health himself last week, when attributing the fall in infant mortality in London to the maternity benefit under the Insurance Acts. Efficient scavenging and unanxious motherhood are both good things, even though they must compete with many others for an immediate effect on vital statistics. But admitting all this, it is equally certain that the public health service in Bradford with its 27 rate-paid doctors has not yet demonstrated by its results the necessity for doing away with the voluntary hospital system, and that, without mincing words, is what the proposals of Dr. J. J. BUCHAN, medical officer of health for Bradford, amount to.

The local medical advisory council does not share Dr. BUCHAN'S views, but this excellent institution, which consists of three consultants, nine general practitioners, and two whole-time officers, did not come into being till last December, and has only just presented its report, a unanimous one, on the proposed municipal hospital of St. Luke's. The proposal is, it may be remembered, to provide a total of 1148 hospital beds, which, judging by the actual experience of running expenses at the Royal Infirmary and the tuberculosis sanatorium of the Insurance Committee, would entail a cost of at least 16*s*. per annum per head of the population of Bradford. Not that this would be a high price to pay for a complete system of municipal health, but the advisory council contends with justice that such a levy at the present time would cut off at its source most of the revenue of the voluntary hospitals. A deficiency of in-patient beds is frankly admitted by the advisory council, which therefore approves the St. Luke's scheme in so far as it is necessary to supplement the present provision of hospital beds and to make this provision adequate. But on Sir NAPIER BURNETT'S estimate of three beds per 1000 of population, Bradford would require no more than 900 hospital beds in all, or only 600 of the additional 1148 suggested. The casualty departments of the voluntary hospitals already meet local needs, their out-patient departments suffice for the reduced demand brought about by domiciliary treatment under the Insurance Acts, and facilities for treatment of eye, ear, nose, and throat might be provided by coöperation with the existing special hospitals. The alternative scheme set forth by the advisory council appears on the face of it to be a thoroughly business-like one. It proposes the establishment of a joint hospital board with executive powers enabling it to coördinate all the hospitals in the city, to allocate special work, to avoid overlapping, to give first-hand information on hospital matters to the municipal health committee, to appoint the visiting staffs, to select and nominate applicants to all vacant posts. At St. Luke's itself it advocates a practitioners' ward into which patients might be sent for treatment by their own medical attendants; apart from this, the appointment of the staff to be made on the lines recently adopted at the Paddington Infirmary, London, under the St. Mary's Hospital scheme. Such a staff would be made up of four physicians, four surgeons, one obstetrician, one ophthalmic surgeon, one aural surgeon, one pathologist, one radiologist, and two anæsthetists, and, in addition, beds should be placed at the disposal of the tuberculosis officer.

We believe that the scheme substantially as suggested, if it could be carried out with the full and hearty concurrence of all those concerned, would indeed meet the needs of Bradford and provide a nucleus for future development, whether along municipal or voluntary lines. It contains the essentials of continuity with the past without unduly pledging the future. It has a proper regard for economy both in money, materials, and personnel. Whether all parties in Bradford are prepared to sink their grievances, some of them very real ones, for the common good remains to be seen. The eyes of the public health workers of the country are fixed upon them; this is a critical position, and no one will mistake for weakness the conciliatory attitude of true statesmanship.

Intussusception.

INTUSSUSCEPTION in its acute form among children is a disease which even at the present time is exceedingly fatal, but this high mortality is not inevitable and is due very largely to delay in diagnosis. Mr. C. P. B. CLUBBE, of Sydney, N.S.W., a second edition of whose useful book [1] has recently appeared, has had a relatively large experience of the condition, yet it is, fortunately, not of very frequent occurrence, and this, no doubt, partly accounts for the fact that when it does occur it is not more readily diagnosed. Nevertheless, it is not difficult to recognise. A previously healthy child is seized quite suddenly, screams, turns pale, vomits, and in a short time seems to recover itself, only to cry again at intervals as if in pain. These symptoms are not in themselves diagnostic, but they become so when coupled with the fact that in 97 per cent. of cases blood is passed by the bowel *in from 2 to 10 hours*. Treatment carried out at this stage will probably result in the patient's recovery, yet in very many cases the diagnosis is not made for two or three days, by which time the child is exhausted and collapsed and is unlikely to survive an operation for more than a few hours. It must be admitted that this common delay in diagnosis may be due in part to inefficient teaching. The description of the disease is in some text-books actually misleading; the early passage of blood per rectum is insufficiently emphasised, and the impression is conveyed that the acuteness of the disease, and therefore the urgency of operation, is to be gauged by the degree of collapse seen in the patient. Yet in every case, except in the very rare condition of chronic intussusception usually found in adults, the disease is essentially acute from the very start, and by the time collapse is seen the patient is almost beyond the help of surgery. The treatment of intussusception by injection into the bowel from below has now been abandoned in favour of operative treatment. Mr. CLUBBE, however, while advocating operation in every case, believes that a partial reduction of the intussusception may be obtained by a preliminary injection and that the duration of the operation may be in this way shortened. His conclusions in most other respects do not differ materially from the accepted views, but for the reasons already indicated his book should be widely read by those whose duty it is to ensure that every case of intussusception is diagnosed and treated at an early stage of the disease.

[1] The Diagnosis and Treatment of Intussusception. By Charles P. B. Clubbe, L.R.C.P., M.R.C.S. Second edition. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 92. Price 7*s*. 6*d*. net.

Annotations.

"Ne quid nimis."

IMMUNITY AND TUBERCULOSIS.

WE can count from memory at least three new antiserums and four new tuberculosis vaccines which have come to our notice since the war ended—most of them with the blast of trumpets in the daily press—and a reference to contemporary medical journals would reveal a considerable addition to the number. There is also a chapter of immunology just opening, with accounts of the protective powers of certain special types of protoplasm against the tubercle bacillus. Witness the almost supernatural accounts of recent experiments with the caterpillar and the snail in destroying the inoculated tubercle bacillus. These accounts recall the early records of Richet's experiments on the sea anemone and anaphylaxis when immunologists paused in wonderment. And the results may not be dissimilar—fascinating and yet disappointing in their application to man. It is essential, therefore, that if we strive for the mastery over the tubercle bacillus we strive by right methods. The late Sir Michael Foster once said that the physiologist should exercise his imagination to the full outside the laboratory, and should forthwith eschew it when he reached his bench. This warning is probably more needed now than at any time since Darwin first preached evolution. It has also been said that when the bacteriologist suffers from nightmare he is haunted in his dreams by a hideous row of control experiments which he has neglected to perform. We could almost find it in our hearts to wish that some men suffered from this nightmare a little oftener. Failure to control experiments is a serious mental aberration on the part of the bacteriologist, and when the clinician turns bacteriologist he is particularly liable to this form of mental disorder. How many valueless tests have been made in the study of tuberculosis, and how many wrong conclusions drawn by failure to make controls with the normal? We need to control the virulence and purity of our cultures, the toxicity of our media, and a hundred other factors; and when we come to use antiserums there is a whole new field of control research awaiting us on the influence of normal serum on immune bodies and on pyrexia and metabolic processes generally, which at present we have barely visualised. Nor are these the only factors. The physician, if he be honest with himself in testing a tuberculosis vaccine or antiserum, must make controls as to dosage and auto-inoculation; he must compare the normal individual with the abnormal. In the ideal experiment there is only one variable factor, the one on which we are at the moment researching; all else is stabilised. These are conditions we should aim at. Here especially is the clinician's pitfall, because it is hard to equalise things by the bedside. And the climax of research is reached in those statistical results known as "cures" which beset the path of every worker. No phase of work is more readily misinterpreted. A little difference in the method of choosing cases, a little carelessness in following up our results, a little variation in the "end-point" of a clinical reaction which is rarely as clearly defined as a titration in volumetric analysis, a little undue optimism about that fatal phrase "quiescent lesion," and it is all up with our statistics. The penalty is paid by the patients. One moral is to pay a vast deal more respect to the accurate meaning of the word specific. Having exalted the term to a special place in the vocabulary of immunity, let us not prostitute it to the use of every new and untried remedy in vaccine and serum therapy.

THE COMPARATIVE METHOD IN MEDICINE.

FOR many years Sir Clifford Allbutt has been advocating the consolidation of all branches of medical study in the belief that without the comparative method medicine cannot make active growth on the larger lines. Professor F. Hobday's lecture, which we print elsewhere, delivered at a combined medical and veterinary meeting, gives examples of the peril to man from animal diseases, grave enough in themselves to drive this lesson home. But there is far more in it than this, as Professor Hobday indicates—namely, that only in the light of disease as a whole can its parts be adequately known and its intimate laws understood. The comparative method has been fertile of results in the spheres of anatomy and morphology, as, indeed, it has been the groundwork of modern developments in the study of history, language, and religion. Much good might come from affiliating a section of veterinary medicine with the Royal Society of Medicine, or, perhaps better, from organising a section of comparative medicine at which graduates of both professions could discuss subjects of mutual interest. The large attendance at the discussion on March 14th to discuss the Eradication of Tuberculosis in Man and Animals confirms the interest taken in these borderland topics. Cambridge University has its field laboratories and its agricultural department, and, apart from any other motive, it would probably pay pedigree stock-breeders and nurserymen very well to endow an institute for practical and theoretical work on comparative medicine, both of plants and animals. An endless variety of experience and opportunities for research would be afforded by comparative pathology.

THE UROHÆMOLYTIC COEFFICIENT.

Professor Alfredo Amati, of the University of Naples,[1] has been conducting some new researches on urinary hæmolysis as an aid to the diagnosis of nephritis and malignant disease. In his first series of experiments his object was to investigate in what way the red cells behaved when immersed in the urine of healthy persons, and what influence the specific gravity, reaction, amount of chlorides, urea, and molecular concentration had upon the phenomenon of hæmolysis. The result of this first series was to show that normal urine is never hæmolytic, but, on the contrary, has in the majority of cases an antihæmolytic action on the blood cells. And an interesting point is that this antihæmolytic action bears no direct relation to the specific gravity, reaction, quantity of urea and chlorides, or cryoscopic delta. Apart from urea, which it is known has no action on the red cells, it was found that urines with low specific gravity, deficiency of chlorides, and high cryoscopic delta did not cause hæmolysis, almost as if they did not obey the physical laws of osmosis, thus confirming the hypothesis that in the urine of healthy persons there is an antihæmolytic substance which renders it resistant to these physical laws. The second series of experiments were with pathological hæmolytic urines, of which, after long investigation, Professor Amati only found six—three from cases of chronic interstitial nephritis, one in chronic parenchymatous nephritis, one with carcinoma of the uterus, and the last with sarcoma of the sternum. The specific gravity, amount of salts, &c., seemed to have very slight influence on the phenomenon of hæmolysis in these cases, but the reaction was not constant. The inconclusive nature of these experiments led Professor Amati to a third series in which he investigated the effect of adding distilled water to urine—i.e., if the urine of a healthy person is not hæmolytic how much distilled water must be added to make it globulicidal. He took a series of eight test-tubes, the first containing 6 c.cm. urine alone, the next 5½ c.cm. urine and ½ c.cm. distilled water, and so on, the eighth having ½ c.cm. urine and 5½ c.cm. distilled water. The patient's finger is pricked and two drops of blood allowed to fall into each test-tube, which are then placed in an incubator at 37° C. for 2–24 hours. The results found were that physiological urines in order to become hæmolytic had to have a marked dilution with distilled water, usually 5 water to 1 urine. The important point is that the degree of dilution is constant in all urines, and if the smallest dilution required to render a urine hæmolytic be called the urohæmolytic coefficient, it may be said that this

[1] Il Policlinico, Practical Section, Feb. 28th, 1921.

coefficient is constant in normal urine, being usually equal to $\frac{2}{3}$, but may oscillate between $\frac{1}{3}$ and $\frac{4}{3}$. With pathological urines, however, using the same dilution, it was found that in nephritics and patients with malignant disease this urohæmolytic coefficient becomes considerably changed or even inverted, ranging between $\frac{1}{11}$, $\frac{1}{5}$, and $\frac{1}{3}$. We call the attention of observers to these researches which promise to be useful for diagnostic purposes; the method is simple and easy, and within the range of everyone, and if Professor Amati's conclusions are verified the investigation of the urohæmolytic coefficient may become one of the common laboratory methods and of utility in doubtful cases of nephritis and malignant disease.

A FRENCH REVIEW OF MEDICAL PROGRESS.

THE *Archives de Médecine et de Pharmacie Militaires*, published by order of the Minister of War, proposes to issue every three months a "medical chronicle" drawing attention to the notable facts and ideas which have during the period marked the progress of medicine. The present chronicle is from the pen of Dr. de Lavergne, professor at the Military Medical School of Val-de-Grâce, and recounts striking advances in medicine which have come to notice during the war. Spirochætosis ictero-hæmorrhagica was previously unknown, also the broncho-spirochætosis of Castellani, apparently brought to France by Arab troops from Africa; Noguchi has proved yellow fever to be due to another spirochæte. Gas poisoning was a new disease, and amœbic dysentery was almost unheard of in France, where only 13 cases of endemic origin had been reported up to July, 1914. Paratyphoid-A fever was very rare, too, until imported, probably by troops from Algeria and Morocco. Then encephalitis lethargica, a polymorphic disease, was discriminated about 1918. Its virus is a filter-passer which sets up the disease in injected monkeys and rabbits. It is a question whether various of the rarer but well differentiated nervous diseases which we so little understand may not be sporadic cases of this infectious disease. The nature of chorea is in consequence being rediscussed; some bold spirits even ask whether hysteria in certain of its manifestations may not be the expression of an infectious disease. We shall probably in future inject serums protective against both gas gangrene and tetanus, and surgeons have found in the war that the bacteriologists can help them, as for years the physicians have known. The cause of influenza is not completely understood. It appears to be a filter-passer which causes an illness, in itself slight, but opening the way for serious secondary infections against which a patient may be protected by suitable vaccines. The cause of mumps is also a filter-passer, and, inoculated within the parotid of the cat, after nine days' incubation it excites a parotitis, which is sometimes complicated by orchitis. The cause of another infectious disease, typhus, is not yet known, though the disease reproduces itself (Ch. Nicolle) in the guinea-pig injected with the blood of a typhus patient, and cultures of *Bacillus proteus* are agglutinated by serum from cases of typhus. Levaditi and A. Marie claim they have proved the existence of two races of *Treponema pallidum*, one of which is neurotropic and attacks the nervous system, while the other, dermotropic, attacks only the skin. Shock is considered due (Delbet) to the absorption of toxins, products of the crushing of muscles. Then there is Widal's "hæmoclasic reaction," due to the entry into the organism of a heterogeneous albumin. This reaction is recognised by examination of the blood, by the blood pressure, or by alteration in the refractive index of the serum. Sometimes no symptoms follow, sometimes we have evidence of anaphylaxis. Examples are asthma from the smell of sheep, giant urticaria after certain foods have been taken, epileptic fits excited by eating chocolate, or an attack of malaria due to the break-up of the rosettes. He and his pupils show it is not only as amino-acids that proteins leave the intestine; they sometimes enter the portal circulation unchanged. One social change due to the war must be mentioned. A man nowadays brought before a discharge board and found to be on medical grounds unfit for service is presumed to be entitled to a disability pension unless the army can show that his unfitness is not due to his service. Antityphoid, anticholera, antitetanic preventive injections formerly debated are now universally accepted. Some prevent typhus by injecting serum of patients convalescing therefrom, and similar proposals are made regarding measles. But, of course, these methods are of themselves insufficient. Places must be kept clean, water must be sterilised when suspicious; a vigilant police at the frontier may keep off plague and typhus—but what do these precautions avail if the general population be not educated in proportion, if its own manners and customs are unclean and unhygienic? It is clear from the zeal with which France is throwing herself into the fight against tuberculosis that her hygienic conscience is thoroughly aroused ..... But Professor de Lavergne's review should be read at length in the original.

OCCUPATIONAL DERMATITIS IN DENTISTS.

Dr. C. Guy Lane,[1] assistant dermatologist to the Massachusetts General Hospital, Boston, remarks that occupational dermatitis in dentists has usually been attributed to one of their antiseptics or soaps, and with the exception of Mook, who records a case due to apothesin, no one has associated the skin lesions with the use of local anæsthetics. Dr. Lane has recently had occasion to treat three dentists who presented an irritated condition of the hands, apparently due to their individual susceptibility to procain. This drug was introduced into the United States in 1912, where it appears to be the most widely used local anæsthetic among dentists. In its lesser toxicity, greater solubility and stability it possesses considerable advantages over cocaine. It is neutral in reaction, and its solutions are precipitated by alkaloids and alkaline carbonates, though it is not affected by sodium bicarbonate. The eruption in Dr. Lane's cases consisted of circinate erythematous areas with fissures on both palms and about the fingers, and was attended with intense itching. The lesions in the palms closely resembled those of an epidermophyton infection, but examination of the scales was negative. Skin tests with procain solutions revealed an individual susceptibility in each case, there being intense redness and itching within 24 hours at the points of inoculation. A rapid cure followed the discontinuance of the use of the drug, or in protecting the hands by wearing rubber gloves.

ETHNOLOGY FROM AN EASY CHAIR

THIS is the alternative title of Lieut.-Colonel T. R. St. Johnston's delightful book on the Islanders of the Pacific.[2] Here and there we do not follow the medical author's arguments, but his title disarms criticism based upon stern logic. Colonel St. Johnston's thesis is that "the Polynesian and the European had in the remote ages of the past one common ancestry, a kinship of common blood." And the following is the author's account of this ancestry. There was once (p. 262) a nation termed "Armenoid," who inhabited the country north of Mesopotamia, and who, several thousand years ago, began one of the well-known tribal migrations. The Armenoids invaded Egypt, got down to the Persian Gulf and invaded India, where to-day the Nagas are probably their descendants. They pushed out the aboriginal inhabitants—i.e., the Dravidians, who were driven down to the Malay Peninsula and the Indonesian islands. Meantime the Armenoids who had gone down to Egypt had worked their way down the Red Sea and eastwards to India where they also came into contact with the Dravidians, and pushed on into the Pacific, intermarrying with the Negrite Pacific aboriginals, and founding the Melanesian peoples of to-day. But the real Polynesians are the descendants of the

[1] Archives of Dermatology and Syphilology, March, 1921.
[2] London: T. Fisher Unwin. 1921. Pp. 307. 25s.

Armenoids who came into India by land, and who in their turn were slowly pushed on by the Aryans until they reached Java and the gates of the Pacific not later than the fifth century B.C. They left Java about the beginning of the Christian era, and when they got to the Pacific islands they found there the black, flat-nosed people of whom so many traditions are found in Polynesian legend. Of the connexion between these people and the people in other parts of the world who mined for gold, worshipped the sun, and built great stone temples, we have not space to talk. But we must refer to one passage of Colonel St. Johnston's book, on the Fire Walk ceremony (p. 173) which, as he says, is or was carried out in other parts of the world, Indonesia, Japan, Egypt, and Bulgaria. In the Pacific it is confined to the Polynesian districts, for though found in Fiji it is only in the definitely Polynesian island of Benga that it exists, and is even there confined to one special group of people. Now Virgil gives an account in the Eleventh Book of the Æneid of a Fire Walk ceremony held at Soracte in honour of Apollo, similar in every way to the Polynesian ceremony described by Colonel St. Johnston. Here are his words:—

> "Summe deum, sancti custos Soractis Apollo,
> Quem primi colimus, cui pineus ardor acerve
> Pascitur, et medium freti pietate per ignem
> Cultores multa premimus vestigia pruna."

Highest of gods, Apollo, guardian of holy Soracte, thou whose chief worshippers we are, thou for whom the pile of burning pine wood is fed, while we upborne by faith press our footsteps in the glowing embers. ..... Pliny (Hist. Nat., VII., 2), commenting on this custom, says that the power to walk through the blazing wood embers was confined to one family, the Hirpi, and Servius, the commentator, quotes Varro as saying that they rubbed their feet with a drug, "medicamento plantas tingunt." So we find an identical ceremony in primitive Italy and in Polynesia. Dr. Warde Fowler, in his Roman Essays and Interpretations, has drawn a most interesting picture of the extraordinary parallelism between certain customs, especially of divination, which exists between those of primitive Italy and certain tribes of modern Borneo, such as the Kayans and Kenyahs. The Kayans are partly of Caucasian blood, and are believed to have found their way into Borneo from Central Asia by way of Burma; Borneo, it is true, is not Polynesia, but it is a stepping-stone thither from India. So here we have another link between ancient Italy and the Far East, and the sum of Colonel St. Johnston's speculations is that the Polynesian race must not be allowed to die out. One point more, and that a very speculative one. There is a tradition that about the twelfth century a ship with whites on board arrived at Oahu, and that this is probably the same ship in which Paumaha, of Oahu, brought back two white gods or priests to Hawaii. Could these white men have been Nestorian missionaries? In the sixth century there was a flourishing Nestorian church in Malabar, and in the eighth century a Nestorian patriarch of China. It is not impossible, therefore, that by the twelfth century some enterprising missionaries may have got into Polynesia, though there is no record left of the pilgrimage.

THE FOURTH VENEREAL DISEASE.

ACCORDING to Dr. William M. Donovan,[1] Instructor in clinical medicine at the University of Wisconsin Medical School, who records an illustrative case, the subject of the so-called "fourth venereal disease," or specific ulcerative and gangrenous balano-posthitis has received comparatively little attention. The condition is an acute inflammatory disease of the glans penis and opposed surface of the prepuce, characterised clinically by ulceration and at times gangrene, with a copious flow of fœtid pus, and caused by the symbiosis of a spirochæte and fusiform bacillus morphologically indistinguishable from those met with in Vincent's angina. Predisposing causes are (1) a redundant prepuce with tendency to phimosis, and (2) an unclean preputial sac with its decomposing smegma. The comparative frequency of the condition is shown by the fact that it constitutes 2–3 per cent. of the cases seen at the Hôpital du Midi. The period of incubation ranges from two to eight days. Subjectively there is a mild itching followed by constant burning pain in the preputial sac and extreme tenderness of the penis on manipulation. Exfoliation of the epithelium of the sulcus, prepuce, and glans takes place and is followed by ulceration. Œdema of the whole penis, phimosis with heat and redness, and palpable dorsal lymph vessels are common. Bilateral inguinal adenitis is frequent, but suppuration does not occur. Constitutional symptoms are absent except in severe cases which are attended by prostration, fever, vomiting, &c. In cases with much phimosis gangrene is liable to supervene unless proper treatment is instituted, but when there is no such phimosis the condition may subside spontaneously with the ordinary methods of cleanliness in two or three weeks. The disease is sometimes complicated by the coexistence of syphilis. The diagnosis is established by the presence of the spirochæte and fusiform bacillus in the pus. Prophylaxis consists in the performance of circumcision. Cauterisation is contra-indicated, as it renders anaerobic conditions possible beneath the coagulated albumin. The following treatment is recommended by Dr. Donovan: A dorsal slit should be made in the phimosis so as to enable remedies to be applied and favour aerobic conditions; the sac should be irrigated every few hours with peroxide of hydrogen solution, and powdered salvarsan or neo-salvarsan should be applied daily to the ulcers.

[1] American Journal of the Medical Sciences, February, 1921.

ANILINE AND CANCER OF THE BLADDER.

THE International Labour Office of the League of Nations at Geneva has established a special section, under the direction of Dr. Carozzi, to deal with industrial hygiene. This section has now produced its first publication, a booklet[1] dealing with cancer of the bladder among workers manipulating aniline. Rather inconclusive reports have been issued on this subject in recent years, and we welcome this reasoned summary of all available evidence, feeling that anything which may throw light upon conditions or influences leading up to malignancy cannot fail in the long run to prove of value to the whole cancer problem. While at the present time the development of the dye industry in this country gives special interest to the subject. The earlier cases of cancer of the bladder were reported from Frankfort-on-Main, but statistics now published include other cases studied by Leuenberger at Basle, which is another centre of the dye industry. The figures indicate that among 15,800 patients treated at the surgical clinic of this town from 1861–1900, only 6 (0·04 per cent.) were tumours of the bladder; while from 1901–10, after the chemical industry was established, among 9650 cases 16 (0·2 per cent.) were tumours of the bladder and 12 of these cases occurred among workers in the dye industry. The occurrence of these cases at Basle establishes a definite relation between the industry and tumours of the bladder. The condition itself takes varying periods to develop, depending upon the chemical influence concerned; less than three years' exposure is claimed to be sufficient in the case of benzidine, five years in the case of naphthylamine, and 12 for rubine and fuchsine. The first symptom is frequently hæmaturia with dysuria, and stranguria; but bladder irritation, disappearing and reappearing, may precede by a considerable time more serious alterations. Lack of personal hygiene, malnutrition, and alcoholism favour the condition, and workers who take great care of their skin show a smaller number of cases. Papillary tumours, adenomata, and adenocarcinomata occur; but the majority of the tumours have an extraordinary polymorphism. These tumours result from "an atypical growth of the epithelium of the mucous membrane, with the formation of microscopic and macroscopic

[1] Cancer of the Bladder among Workers in Aniline Factories. Studies and Reports, Series F, No. 1. International Labour Office, Geneva. February, 1921.

papilloma, the development of granulated tumours, carcinoma, adenocarcinoma, sarcoma, &c." Doubt seems to be present in the first stages of any case as to whether it is benign or malignant. For some indefinite reason a sharp distinction is drawn in the report between tumours of the bladder due to aniline compounds, and epithelial carcinomata as seen among workers manipulating tar, shale oils, and pitch. In each case at first there is an overgrowth of epithelial tissue, papilloma of the bladder in the one case and skin warts in the other. In each case difficulty arises in determining when the overgrowth has taken on malignant characters; O'Donovan [2] holds that in dealing with tar cancer we have in all probability a carcinomatous histological picture from the beginning. In each case metastasis is not the rule. In each case there is a chemical similarity in the bodies bringing about the tissue changes; aniline is a benzene compound, while tar, paraffin, and pitch are all distillation products of vegetable matter containing benzene derivatives. Determination, in these instances of occupational cancers, of the precise substances which can induce hyperplasia in living tissues might go far to disclosing the first stage from normality to abnormality upon which malignancy is finally superimposed. Probably chimney-sweeps' cancer, induced by coal-tar products in soot, and cancer of the lip and buccal cavity, induced by products of tobacco distillation, would be found to have a similar primary cause.

Considerable effort has been made to discover which chemical products are at fault. Evidence points to the aminobenzenes, particularly benzidene and β-naphthylamine. The path of entry into the body is not clear; probably the respiratory and digestive tracts, as well as the skin, each play their part; but the analogy of T.N.T. poisoning would suggest that the skin is the most important. The path of exit is indicated by the pathological results; Kuchenberger claims to have found a colour test by which the presence in the urine of amino-aromatic compounds can be demonstrated. The value of this test, like Webster's test among T.N.T. workers, is to establish the presence of exposure to risk, and the necessity for more efficient means of prophylaxis. Exposure can be minimised by good ventilation, rigorous cleanliness, dust prevention or removal, short periods of work, clean overalls, and a clean skin. Periodical medical examination, including cystoscopy, is needed. Milk should be given to the workers, and alcohol and smoking prohibited.

This pamphlet, which contains a valuable bibliography of the subject dealt with, will, we hope, only be the forerunner of other interesting studies concerned with diseases peculiar to industry.

ACCOMMODATION FOR SEAMEN.

WE are informed that the town council of Newport (Mon.) has formally complained against the unsatisfactory Regulations of the Board of Trade which permit the present degrading type of accommodation for seamen to continue in the British Merchant Service. The report adopted by the council states that the time is ripe for the revision of the British regulations for the hygiene of crew spaces in order to secure larger cubic space for sailors, and urges that a strong committee representing the Board of Trade, the Ministry of Health, shipowners, shipbuilders, the officers and men of the Merchant Service, port sanitary authorities, and the Admiralty be set up with this object. The council points out that the present British official standards are too low, and in some respects inferior to those insisted upon by many foreign countries and British colonies. The council proceeds to say that the excessive rates for sickness and deaths amongst seamen are closely related to the unfavourable conditions of their lives at sea. The figures per thousand for the Navy and the Merchant Marine, drawn from the best statistics available before the war, strengthen these arguments, though it must be remembered, as we pointed out recently in another connexion, these may be gathered on systems which are not really comparable:—

	Royal Navy, 1913.	Merchant Marine, 1913–14.
Total number of men	126,830	245,619
Death-rate from injury	1·18	5·01
,, ,, disease	2·06	4·1
Total death-rate	3·24	9·11

The Merchant Service would appear to have a death rate from disease which is double, and from injury quadruple, that of the Royal Navy in peace-time. We should have to go back 20 years to find so high a death-rate from disease alone in the Navy, but it is three times higher in the Merchant Service. The report points out that, "apart from the question of providing healthier and brighter housing conditions for the Mercantile Marine in return for their noble self-sacrifice during the war and their heroic work in saving the Allies from starvation and ruin," our foreign competitors are giving their men better accommodation, and British sailors and firemen have shown preference for service in American merchant vessels, where conditions of life are so much better.[1] According to the town council of Newport large numbers of ships have been recently built with the war-time improvements omitted, and this without official interference. A 48-hour week for seamen may possibly in the near future be adopted. In that case crews must be much larger, more accommodation will be quickly required, and it is the more important that we should have good plans ready now. The need for international agreement in this matter is real, for ships pass from country to country and crews are of many nationalities, and the Newport report is sound in urging that the League of Nations should establish a minimum international standard of marine hygiene for sailors' accommodation. The report is to be sent to the Prime Minister, the Board of Trade, the Ministry of Health, and others interested in, and with power over, port sanitary work, from whom we trust it will get the careful attention it deserves. It marks an epoch in the fight for good accommodation for seamen in their ships, where the medical officer of health for Newport, Dr. J. Howard-Jones, has long been a protagonist.

SIR WILLIAM THORBURN.

AT the end of last year, as our Manchester correspondent recorded at the time in our news columns, Sir William Thorburn resigned his appointment as senior honorary surgeon to the Manchester Royal Infirmary, doing so, as we were aware, a little before his time expired in order to devote himself more entirely to the private practice of his specialty. The resignation necessarily carried with it the vacation of the chair of clinical surgery in the University of Manchester. The Council and the Senate of the University, in accepting the double resignation, expressed their appreciation of his services and passed a resolution referring to his distinguished record and skill in the practice of his profession. The very warmth of this expression, which was widely published in the press, has had the embarrassing result of misleading many of Sir William Thorburn's friends to believe that he has retired from practice. We are glad to assure them that this is not the case. He has always remained in full private practice, nor has his connexion with the hospital ceased. At a meeting of the medical board of the Manchester Royal Infirmary, held on March 30th, a resolution was moved and carried confirming the appointment of Sir William Thorburn to continue to give lectures on the surgery of the nervous system and to continue doing surgical work at the Infirmary.

WE regret to record the death, at the age of 55 years, of Dr. Robert Murray Leslie, senior physician to the Prince of Wales Hospital and to the Royal Chest Hospital, City-road.

[2] O'Donovan, W. J.: Epitheliomatous Ulceration Among Tar Workers, British Journal of Dermatology and Syphilis, vol. xxxii., 1920.

[1] THE LANCET, 1921, i., 90.

TUBERCULOSIS IN GERMANY.

BY E. G. GLOVER, M.D. GLASG.,
FORMERLY MEDICAL SUPERINTENDENT, BIRMINGHAM MUNICIPAL SANATORIUM, CHELTENHAM.

FROM time to time conflicting newspaper reports reach England as to the exact degree in which Germany has suffered in well-being as the result of the war, and, for this reason, it is perhaps worth while examining the statistical evidence with reference to tuberculosis. The figures given here are taken from the records of the Gesundheitsamt. Tables A and B are concerned

Annual Death-rate from Tuberculosis of All Organs per 10,000 Living Inhabitants.

A.—Whole of Prussia. B.—In German towns.

Year.	Absolute No.	Death-rate.	Year.	No. of districts.	Absolute No. (civil and military).	Death-rate.
1892	—	26·0	1914	386	41,730	16·0
1913	56,861	13·6	1915	383	44,805	16·8
1914	58,577	13·8	1916	383	48,779	18·0
1915	61,606	14·4	1917	383	67,860	25·2
1916	66,544	15·7	1918	373	75,160	28·7
1917	87,032	20·5	1919	365	66,604	27·1
1918	96,844	22·8				

merely with the death-rate from tuberculosis, since there is no compulsory notification of infection in Germany, but only a compulsory notification of deaths from tuberculosis.

The figures in Table A are for the whole of Prussia, town and country included; in round figures, we may note specially the fall of the death-rate from 26 in 1892 to 13·8 in 1914 and the rise to 22·8 in 1918. As, however, the figures for rural districts always water down the tuberculosis death-rate it is advisable to consider the town death-rate as given in Table B. In this case the figures are for the whole of Germany and deal with the rate in towns of 15,000 inhabitants and over in about 380 districts, the population concerned totalling 25,797,000. The increase from 1914 is again remarkable, and we may say that between 1914 and 1919 100,000 more patients died than might have been expected, calculating from the rates of 1914. These figures are perhaps less illuminating as there is no record for Alsace-Lorraine in 1918–19, and none for Posen in 1919, and over 10,000 other fatal cases have, therefore, not been included.

Owing to the faulty system of notification in Germany, and the frequent lack of differentiation between lung tuberculosis and tuberculosis of all organs, it is difficult to give satisfactory figures with regard to lung disease, but a rough idea may be obtained from Table C, which deals with lung rates in some towns, districts, and and provinces.

TABLE C.—*Death-rate of Lung Tuberculosis per 10,000 Living.*

Place.	1885	1913	1917	1918	1919
Berlin	34·6	16·6	30·4	29·9	23·3
Hessen	29·2	12·5	21·2	20·0	19·0
Bavaria	25·4	14·7	17·0	17·6	—
Prussia	—	12·0	18·2	20·5	—
Munich	—	17·3	21·9	23·9	—
Saxony	25·0	11·4	13·1	Incomplete.	—

The difference between industrial and rural areas in Table C. is very striking. With regard to the increase in the tuberculosis "infection-rate," this can only be guessed in Germany, but going on the assumption that at least twice the total number of deaths represents the number of cases living (and this, in England at any rate, would be a very modest assumption), we may take it that in 1913 there were 200,000 cases, and that in 1918 this figure had risen to 340,000. As a matter of fact, the Gesundheitsamt estimates that there are at present little short of 500,000 cases in Germany, and this is probably true.

A certain amount of corroborative evidence can be had from general health statistics, although naturally less stress can be laid on their probable accuracy. From a report of the Reichs-Versicherung one finds that whereas in 1913 10,400 adults were on the sick-list, in 1919 this number had risen to 43,000; in Hamburg the number of tuberculous patients receiving extra nourishment rose to nearly double in the period from November, 1917, to August, 1919; in Berlin the death-rate for women and children rose from 14 in 1913 to 19 in 1920 (this last figure making due allowance for the influenza epidemic). According to the Berlin Industrial Friendly Society the percentage of deaths caused by tuberculosis, in relation to the total deaths from all causes, is as follows:—

	Men.	Women.
1914	30	32
1917	42	45
1919	35	39

As is well known, a similar rise in tuberculosis death-rates and morbidity-rates occurred in England during the war (speaking from memory, the number of actual deaths in England and Wales rose from 49,000 in 1913 to 58,000 in 1918), but compared with the rates in 1892 it is not nearly so striking as in Germany. The figures before 1892 in Germany are not very reliable or rather not comparable. It is therefore interesting to inquire whether in Germany, as in England, an improvement took place after the conclusion of hostilities. That such an improvement did take place can be gathered from the following figures, which show the half-yearly death-rates per 10,000:—

	First half.	Second half.
1914...	17·5	14·6
1919...	34·4	27·1
1920...	25·6	(?) 16 (incomplete).

All the figures go to show that the highest death-rate was reached in 1918, and that, especially in the second half of 1919, there was a marked improvement which has since continued. The same applies to the statistics for living cases. The figures for the Berlin Krankenkasse show a distinct drop since 1918, and this is confirmed by the Stettin report, but it is interesting to note that in Mannheim (where industrial conditions are very bad) the reverse holds true, especially for infectious patients. Not only has the rate risen there, but whereas in 1918 of all new cases 17 per cent. were infectious, in 1919 21 per cent. were infectious. Whether the rates will shortly fall to the pre-war level is an open question, but taking into account the present food situation in Germany it seems unlikely. As a rough approximation one might say that the present food conditions in Germany are much worse than they were ever in England at the worst time of the war, and that this must affect the next ten years at least, especially amongst those who are at present in youth or adolescence.

Methods of Fighting Tuberculosis.

On the other hand, the fact has to be faced that the present organisation of antituberculosis work in Germany is unable to cope with the problem: firstly, because of lack of money; secondly, because the German is no longer as docile and amenable to health regulations, or, indeed, to any official regulations, as formerly; and thirdly, because the dispensary system has not been effectively organised, especially with regard to treatment and after-treatment. Of course, there are many excellently organised centres, as in Stettin, but in other places these are absent, and in large towns like Berlin there are so many organisations that within a circle of stools the unfortunate patient falls to the ground. The working of the insurance regulations in a town like Berlin is curious. Sick benefit is organised and administered, as in England, through the medium of the Krankenkassen, but tuberculosis work is in the hands of the invalidity department. This is due to the fact that since the invalidity section suffered so much from tuberculosis unemploy-

ability they set out, at first, to attempt to cure tuberculous cases; and latterly, to attempt to prevent infection. For this reason the Landes-Versicherung has a well-organised system of dispensaries, sanatoriums, &c.

The uninsured are less fortunate. True, at the Charité (a model University hospital) there exists an organisation where officials of the more needy class, small shopkeepers, shop assistants, and widows and children without means can receive treatment. In 1919, 6080 were on the books, and in 1920 this rose to 9200. As a side-light on present conditions, it may be noted that in 1919 the figure included 38 authors and artists, a few doctors and lawyers, and several hundred Government officials, many of whom were of high grade. At the Charité the patient pays one-third of his own costs, the employers, if any, are approached to pay another third, and the remainder is found from various sources—e.g., the municipality, the Government, the Deutsche Central-Komitee, or privately.

An additional complication in Berlin was introduced by the extension of the town boundaries. In the suburbs, both rich and poor, regional dispensaries existed for dealing with the diagnosis and home visitation of tuberculosis cases, and these have not yet been absorbed into any central organisation. Both insured and uninsured are dealt with here, and here, as with the Landes-Versicherung and Charité, the families of infected cases are dealt with. It is expected that in the near future this family system will apply to diseases other than tuberculosis. In practice, then, a tuberculous patient is recommended by his private doctor, or by the Kassenarzt (insurance doctor) or by his Poor-law doctor (Armenarzt) to go, or goes of his own initiative, to a local Fürsorgestelle (dispensary), whence, if insured, he is transferred to the Insurance Organisation, or where, if uninsured, various attempts are made to provide him with treatment.

Deficiencies of the System.

But when one comes to inquire what this treatment actually amounts to, the German system, sometimes through no fault of its own, shows up very badly. In all Germany in the year 1918–1919 there were 168 sanatoriums, with 17,500 beds, and for children 172 institutions, with 14,000 beds. This does not include, of course, a number of beds in the various hospitals and Poor-law infirmaries. In Berlin, for example, there are 378 beds in hospitals and 160 in Poor-law infirmaries, mainly for hopeless cases, leaving roughly about 680 available beds in proper tuberculosis sanatoriums. This, for a population of over four million under present conditions of infection, is much too little. It is estimated at the Gesundheitsamt that only 25 per cent. of any new series of cases can get effective sanatorium treatment; the Charité authorities estimate the figure at 35 per cent., and it is at any rate safe to say that 50 per cent. do *not* get adequate treatment. The period of treatment, too, has been reduced, largely through lack of money, to 6–8–10 weeks' duration. Moreover, it is much more difficult for uninsured cases to obtain treatment; the uninsured Fürsorge-Stellen must go from pillar to post begging or purchasing sanatorium accommodation under various organisations in various parts of the province of Brandenburg.

This deficiency in sanatorium treatment would not be serious if at the various dispensaries there was provided effective out-patient treatment or after-treatment. Unfortunately this is not so. The dispensaries are exceedingly well organised as far as diagnosis, statistical records, the supply of printed forms, innumerable recommendation forms, and the dispensing of good advice is concerned; they are also the centre-point for a staff of efficient nurse-supervisors, but the dispensing of medical treatment is practically unknown. There are, indeed, many insurance dispensaries where tuberculin is administered, and the Charité in Berlin has a fairly efficient treatment clinic for uninsured cases, but in general there is no treatment in dispensaries. The patient has the cold comfort of accurate diagnosis, and must thereafter extract what satisfaction he can from printed recommendations. What the dispensaries have done in the past and still try to do is to distribute food, cod-liver oil, and clothing to needy cases, but at the present time this is practically a dead letter. When the tuberculosis patient in Germany asks for bread he is almost literally given a stone, or at least a bread-substitute which closely resembles emery-paper.

In practice, treatment is limited (if one exclude the small amount of sanatorium treatment provided) to home-care, or, as it is euphemistically termed in England, "domiciliary" treatment. This is usually carried out by the Insurance or private doctor. The Poor-law doctor also treats cases, but he is not in great demand; the Brandenburger hates the Poor-law and, indeed, until recently at any rate, treatment by Poor-law officials entailed loss of certain civil rights. The end of the tuberculosis story in Germany is very simple: notification of the patient's death is made under legal statute to the Kreisarzt who is really the police doctor, the house is sterilised, the children are examined, and that is the end.

Some Observations.

Three observations of some interest may be made. Amongst all classes in Germany the relatively alarming increase in tuberculosis is attributed mainly to the effect of the "Hunger-blockade" as it is called, and by the same classes it is held that improvement in tuberculosis is greatly retarded by the transfer to other countries of a large proportion of milk cows. On the other hand, some tuberculosis authorities are, all things considered, very optimistic about the future of the tuberculosis crusade and think that in a comparatively short time after food-supplies approximate to the normal quantity the rates will also fall to normal. The outside observer, remarking as he must, the lean, yellow, under-nourished look of German youths cannot but feel that this bodes ill for the tuberculosis rate in ten or so years' time, and finds such optimism is premature.

The second observation is that England and America have every reason to feel proud of the activities of the various relief missions, especially those of the Quakers, who unobtrusively, but effectively, help in some way to provide children, apprentices, university students (and in the near future, it is hoped, tuberculous cases) with adequate nourishment. It is true that often only the fringe of the problem is touched, still the attempt is one which deserves all praise.

The last observation is that the average German appears to have only a theoretical acquaintance with the principles of fresh-air inhalation; preferably he takes his air well boiled, or at any rate half cooked: real fresh air he relegates to its natural habitat—viz., out of doors. It is worthy of comment that the interior of many tuberculosis institutions is warm enough to make the enthusiastic foreigner mop his inquisitive brow, and to make him sigh for the English system whereby he no sooner enters a tuberculosis centre than he is almost blown out of the exit. In Germany, however, this does not apply to the poorer institutions and not to the homes of the poor. It should be remembered that even substitute coal in Germany costs more marks than the indigent can afford.

I am obliged to Professors Möllers and Kayserling, to Dr. Helm, to Geheimrat Pütter, and many others for much information and the privilege of inspecting their institutions and statistics.

Berlin, Feb. 8th, 1921.

SERBIAN WORKERS REUNION.—**The second annual** reunion of the workers for Serbia will be held at the Wharncliffe Rooms, Great Central Hotel, London, on Tuesday, April 19th. Colonel Sir Courtauld Thomson, Chief Commissioner of the British Red Cross in the Near East from 1915 to 1919, will take the chair. Dinner 7 for 7.30 P.M., dancing at 9.30 P.M. Last year 164 were present, and it is hoped that all medical men and women who served with the medical missions or with the R.A.M.C. units attached to the Royal Serbian army will attend. Application for tickets should be made before April 12th to the honorary secretary, Miss Marx, 24, Melcombe-court, Dorset-square, London, N.W.1.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Professional Secrecy.

THE Council of the Royal College of Surgeons in Ireland has passed the following resolution:—

The Council are of the opinion that it is contrary to the public interest that medical men should break their professional tradition and, without the consent of their patient, disclose information which they have obtained in the discharge of their professional duties. If any instance is reported to the Council in which one of the Fellows or Licentiates of this College is pressed to break confidence, such specific case will be considered by the Council and representations made to the authorities if such be thought necessary.

It is understood that an opinion in a similar sense has been embodied in a resolution by the Royal College of Physicians of Ireland.

Sentences on Medical Practitioners.

It is announced that Dr. Patrick McCarville, Monaghan, has been sentenced to six years' penal servitude for operating in a "Flying Squadron" in the Bragan Mountains. The trial took place at Belfast. The "flying party" occupied a house near the hills owned by a man named M'Kenna, in which arms, ammunition, and explosives were found. Dr. A. English, assistant medical officer of the Ballinasloe District Asylum, has been sentenced to nine months' imprisonment for having in her possession literature relating to Cumann n' Ban and Dail Earann.

The Irish Census.

Arrangements for the taking of the Irish Census were in train, and it was expected that the enumeration would be made next month. Last week, however, Dail Earann issued a decree prohibiting those who acknowledge its authority from assisting in the Census. In face of this very regrettable decision there is little use in the Commissioners proceeding with their task, since without cordial coöperation on the part of the entire public a Census will be worse than useless; it will be misleading.

March 28th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Post-graduate Medical Teaching in Glasgow.

FOR many years post-graduate instruction in medicine has been given in several Glasgow hospitals, but only in the early part of 1914 was a special endeavour made to organise a permanent comprehensive post-graduate teaching scheme for Glasgow as a whole. The outbreak of war delayed further progress until 1919, when an emergency post-graduate course was organised and carried on in the summer and autumn. The course was highly successful, and the committee in charge felt justified in recommending the institution of a permanent scheme. Such a scheme was adopted on March 2nd, 1920, at a joint meeting of the Faculty of Medicine of the University of Glasgow and the General Committee for Post-Graduate Medical Teaching, which had been appointed in 1914 at a public meeting of the medical staffs of the various Glasgow teaching institutions and hospitals. The various teaching institutions and teachers taking part in the scheme constitute an association the business of which is managed by a Board elected periodically by them. The chairman of the Board is Sir Donald MacAlister and the vice-chairman Sir Hector C. Cameron. To inaugurate the scheme the Board arranged a series of weekly demonstrations for practitioners extending from November last till May of this year, and the number of practitioners taking advantage of the series is satisfactory. For the ensuing summer and autumn the Board has arranged a comprehensive course of instruction for medical practitioners extending from May till October. Most of the Glasgow hospitals are taking part in the scheme, which has been arranged as far as possible so that a practitioner who so desires may occupy the greater part of each day attending classes open to all qualified medical practitioners and conducted independently of the undergraduate courses. A practitioner may enrol for one or several classes and may attend for one or more months at his discretion. The Board has also had in view the provision of facilities for young graduates and others who may wish to obtain a closer acquaintance with hospital work in one or other of its branches and who are prepared to give the necessary time. Arrangements have been made whereby a limited number may become attached to wards or out-patient departments, nominally as clinical assistants, for definite periods throughout the year. As such they would work under the direct supervision of the physician or surgeon in charge and carry out such detailed investigations as directed. A young graduate wishing to specialise in children's diseases, mental diseases, tuberculosis, venereal disease, or other subjects should find such a training invaluable. It has long been felt that Glasgow, in the midst of such a vast industrial population, with its abundance of clinical opportunities, should become one of the leading centres of post-graduate medical teaching. This year the Board of the Glasgow Post-Graduate Medical Association presents to the medical profession its first organised scheme of teaching, trusting it will enable practitioners to keep themselves abreast of the times. Full information concerning the classes and clinical assistantships may be had on written application to Dr. A. M. Kennedy, secretary, Post-Graduate Medical Association, University, Glasgow, or by applying personally at the various hospitals which are taking part in the scheme.

Coördination of Medical Services in Aberdeenshire.

A conference of representatives of the local authorities in the county of Aberdeen and other bodies interested in coördination of the medical services was held in Aberdeen on March 18th. The main points discussed were: The possibility of devising a scheme for coördination of the services of the medical staffs of the county council and the education authority with a view to economy in administration and prevention of overlapping; a possible agreement whereby the services of the nurses employed by the several district nursing associations be made available not only for the purposes of maternity and child-welfare schemes and the tuberculosis scheme but for the medical inspection and treatment scheme of the education authority. Could an agreement be arrived at between the education authority and the various local authorities not only for the cleansing of verminous children, but also, where necessary, of the whole household in which the children resided? The meeting was unanimously of opinion that a scheme of coördination for the several local authorities should be instituted. It was resolved that the county medical officer, the medical officers of health for the several burghs, the school medical officer, and the tuberculosis medical officer should consider the whole question of the coördination of the medical service and frame a scheme and submit it to a future meeting.

Perth Infirmary: Students' Effort.

A week's effort, organised by students of Dundee University on behalf of the Perth County and City Royal Infirmary, which last year had a deficit of almost £7000, was opened on March 26th by a free gift sale at Perth Auction Mart. The sale was opened by Sir Robert D. Moncrieffe. With donations the sum realised was fully £500.

Aberdeen Dispensary and Vaccine Institute: Annual Meeting.

The annual meeting of the managers and subscribers of the above institute was held on March 24th in the town-hall, Lord Provost Meff presiding. The annual report showed that in the past year the total number of cases treated in all departments was 3659, an increase of 447 on the previous year. The number of patients treated at their own homes by the general staff of the dispensary was 929, being an increase of 236 on the previous year, and the number of visits paid to patients was 2639, being an increase of 803. The number of vaccinations and revaccinations performed was 111.

being 72 more than the number for the previous year. The special ear, nose, and throat cases treated numbered 336, with a decrease of 19 over the number in the previous year. In the ophthalmic department 80 cases, and in the special department for women 142 cases, were treated. The number of prescriptions dispensed was 14,536, being 128 fewer than in the previous year. The number of medical students who paid for admission to the general practice of the institution was 100, being an increase of 74. The number of vaccination certificates issued amounted to 65, an increase of 27. The annual subscriptions received amount to £87 7*s.* 6*d.*, being a decrease of £6 13*s.* on the previous year. The total receipts for the year ending Dec. 31st, 1920, were £967 7*s.* 3½*d.*, and the total expenditure £1008 16*s.* 1½*d.*, leaving a deficiency for the year of £41 8*s.* 10*d.*

March 28th.

URBAN VITAL STATISTICS.

(Week ended March 19th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 15·5, 15·2, and 15·2 in the three preceding weeks, declined to 13·9 per 1000. In London, with a population of 4½ million persons, the death-rate was 13·1, or 2·0 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 8·0 in Rotherham, 8·1 in Walsall, and 8·4 in Wallasey, to 23·7 in Dewsbury, 26·1 in Hastings, and 26·8 in Bury and in Tynemouth. The principal epidemic diseases caused 249 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 77 from infantile diarrhœa, 63 from diphtheria, 51 from whooping-cough, 34 from measles, 20 from scarlet fever, and 4 from enteric fever. Measles caused a death-rate of 2·9 in West Bromwich and diphtheria of 2·8 in Merthyr Tydfil. The deaths from influenza, which had been 138, 167, and 149 in the three preceding weeks, numbered 151, and included 42 in London, 10 in Leicester, and 6 each in Birmingham and Sheffield. There were 3695 cases of scarlet fever and 2817 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3730 and 2818 respectively at the end of the previous week. During the week ended March 12th 5 cases of encephalitis lethargica were notified in the County of London, and comprised 1 each in Finsbury, Greenwich, Lewisham, St. Marylebone, and Wandsworth. The causes of 44 of the 4946 deaths in the 96 towns were uncertified, of which 13 were registered in Birmingham, and 3 each in Stoke-on-Trent and Manchester.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 19·4, 18·0, and 18·5 in the three preceding weeks, fell to 17·8 per 1000. The 398 deaths in Glasgow corresponded to an annual rate of 18·9 per 1000, and included 47 from whooping-cough, 15 from influenza, 7 from infantile diarrhœa, 4 from diphtheria, 2 from scarlet fever, and 1 from measles. The 158 deaths in Edinburgh were equal to a rate of 18·5 per 1000, and included 7 from influenza, 6 from measles, 2 from whooping-cough, and 1 each from diphtheria and infantile diarrhœa.

Irish Towns.—The 140 deaths in Dublin corresponded to an annual rate of 17·3, or 0·8 per 1000 below that recorded in the previous week, and included 2 each from influenza and infantile diarrhœa, and 1 from diphtheria. The 147 deaths in Belfast were equal to a rate of 18·3 per 1000, and included 16 from whooping-cough and 3 from infantile diarrhœa.

(Week ended March 26th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 15·2, 15·2, and 13·9 in the three preceding weeks, further fell to 13·0 per 1000. In London, with a population of 4½ million persons, the death-rate was 11·6, or 1·5 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 4·9 in Smethwick, 6·3 in Wallasey, and 7·0 in Gloucester, to 20·0 in Hastings, 20·5 in Middlesbrough, and 25·4 in Carlisle. The principal epidemic diseases caused 226 deaths, which corresponded to an annual rate of 0·6 per 1000, and comprised 65 from infantile diarrhœa, 59 from diphtheria, 53 from whooping-cough, 33 from measles, 14 from scarlet fever, and 2 from enteric fever. Whooping-cough caused a death-rate of 1·3 in Sunderland, and diphtheria of 1·4 in Tottenham and 2·8 in Dewsbury. The deaths from influenza, which had been 167, 149, and 151 in the three preceding weeks, declined to 121, and included 33 in London, 10 in Sheffield, 7 in Birmingham, and 6 in Leicester. There were 3608 cases of scarlet fever and 2778 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3695 and 2817 respectively at the end of the previous week. During the week ended March 19th, 5 cases of encephalitis lethargica were notified in the County of London, and comprised 1 each in Islington, Finsbury, Bethnal Green, Battersea, and Wandsworth. The causes of 20 of the 4633 deaths in the 96 towns were uncertified, of which 4 were registered in London and 3 in Birmingham.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 18·0, 18.5, and 17·8 in the three preceding weeks, further fell to 15·3 per 1000. The 354 deaths in Glasgow corresponded to an annual rate of 16·8 per 1000, and included 19 from whooping-cough, 15 from influenza, 4 each from diphtheria and infantile diarrhœa, 2 from measles, and 1 from scarlet fever. The 115 deaths in Edinburgh were equal to a rate of 13·4 per 1000, and included 7 from influenza, 5 from whooping-cough, 3 from diphtheria, and 2 from measles.

Irish Towns.—The 136 deaths in Dublin corresponded to an annual rate of 16·8, or 0·5 per 1000 below that recorded in the previous week, and included 4 from infantile diarrhœa, 3 from influenza, and 1 each from whooping-cough and diphtheria. The 124 deaths in Belfast were equal to a rate of 15·4 per 1000, and included 7 from whooping-cough, 3 from infantile diarrhœa, 2 from measles, and 1 each from scarlet fever, diphtheria, and influenza.

The Services.

ROYAL NAVY MEDICAL CLUB: ANNUAL DINNER.

THE annual dinner of the Royal Navy Medical Club will take place at the Hotel Cecil, London, on Thursday, April 14th, at 7.30 P.M. for 8 P.M. Members who wish to be present are asked to inform the honorary secretary, Royal Navy Medical Club, 1, Lake Buildings, St. James's Park, London, S.W.1, not later than seven clear days before that date.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut.-Cmdr. D. Loughlin is allowed to withdraw from the Service with gratuity.

ARMY MEDICAL SERVICE.

Major-Gen. O. R. A. Julian retires on retired pay.

ROYAL ARMY MEDICAL CORPS.

The undermentioned Captains relinquish the acting rank of Major: C. M. Gozney, G. D. Harding, and C. R. Dudgeon.

Lieut. (temp. Capt.) H. G. P. Armitage to be Captain.

H. W. Street, late Captain, Can. A.M.C., to be temporary Captain.

Officers relinquishing their commissions:—Temp. Major M. H. Allen (retains the rank of Major), Capt. E. Hulme and Temp. Capt. J. D. Judson (retain the rank of Captain).

TERRITORIAL FORCE.

Capts. H. K. Griffith and S. F. St. J. Steadman to be Majors.

ROYAL AIR FORCE.

Flight Lieut. C. W. T. Baldwin and Flying Officer F. T. Allen are granted temporary commissions in the ranks stated.

BRIGHTON, HOVE, AND PRESTON PROVIDENT DISPENSARY.—The report for 1920, submitted to the annual governors' meeting on March 15th, recorded increased charges to patients. The payments of members are to be increased from 2*d.* to 3*d.* for those over 16 years of age, and from 1*d.* to 1½*d.* per week for those under that age, the maternity fee being raised from £1 1*s.* to £1 11*s.* 6*d.* The whole of the members' contribution was paid to the doctors attending them without deduction of any kind, and the doctors supplied all necessary medicine free of any further charge. The administrative expenses were provided by subscriptions and donations and from the income of invested capital. The governors would in future be obliged to require those using the hospital to pay still further for some of the benefits they receive over and above their weekly subscription. The dispensary was founded in 1837 to enable the poorer classes to choose their own doctors and be attended to by their own paid medical men. When the National Insurance Act came into operation it was found that there was still need for the provident dispensary, 135 new members being admitted during 1920, against 156 in 1919. There has been some doubt expressed as to the effect on the work of the dispensary of Dr. J. F. Gordon Dill's provident scheme for hospital benefits and additional medical services, but this cannot yet be estimated.

Correspondence.

"Audi alteram partem."

A CONTROLLED STUDY OF SANATORIUM RESULTS.

To the Editor of THE LANCET.

SIR,—I am glad that Dr. Thompson Campbell has replied to Dr. E. Ward's article on sanatorium results in your issue of March 12th. The obviously unscientific data on which Dr. Ward's conclusions are based must have struck many who read his article. If he were right, in our present state of knowledge, the best that can be done for tuberculous patients is to leave them alone. The worst, almost, is to send them to sanatoria for treatment. Statistics, as quoted by Dr. Ward, are of no value because they give figures which only deal with tuberculous cases from one, and that the least important aspect. To classify patients as suffering from slight, medium, and extensive tuberculosis is irrational and useless. In the ultimate issue it is not the extent but the intensity of the disease that tells. Slight disease with marked toxæmia has a far worse prognosis than extensive disease with a slight degree of toxæmia. Further, he does not state the duration of treatment. Three months in a sanatorium is rarely of much good, and, to judge the results of sanatorium measures from a series of cases who spend an inadequate period, is wrong. Many patients require three years' treatment and not three months. That it pays to keep patients for prolonged periods one has had frequent proofs. For example take the following case:—

One of our large Scottish Universities gives a prize to the student who proves to be the most brilliant man of his year in any faculty. Last year the man who obtained that prize was one who had been a patient in the Consumption Sanatoria of Scotland, Bridge of Weir, six years ago. He suffered from advanced phthisis and had very marked toxæmia. Had we discharged him at the end of one year, I have little doubt that he would have been dead within a few months. Had we discharged him at the end of two years, I fear that he would have survived but a short period. Keeping him for three years so established him that he was enabled to go through an arduous university course, and gain not only this coveted prize but a scholarship of several hundreds a year for four years. He has, I may say, had no recurrence of the symptoms during the period of strain. Dr. Ward says that "if a tree growing feebly in a poor soil is transplanted to a good soil, and then after improvement returned again to the bad soil, it will not resume its feeble growth, but will probably die." That is not quite true. It depends upon how long the transplanted tree is allowed to remain in the good soil.

Dr. Ward's controls seem to have been a doubtful collection. One of the reasons why they were not sent to sanatoria was because it was decided to keep them under observation for a while, to avoid for them the sanatorium stigma. Another reason was that they were unwilling to go to a sanatorium. What proof had he that they were really tuberculous? My experience in consulting and dispensary practice is, that patients, when diagnosed as tuberculous, are very submissive in their anxiety to be restored to health. They gladly acquiesce in any suggestion. Very rarely does the stigma of a sanatorium weigh with them. In cases that are doubtful it is different. The majority of these do well with a change and with symptomatic treatment.

A personal experience over many years has convinced one of the fact that in the sanatorium we have a means of dealing radically with this scourge in individuals. The results frequently are quite as dramatic as those obtained in the realm of surgery. Three things are required: the right type of case, a well-organised method of treatment along the lines of graduated rest and exercise, and a prolonged period of residence. Hyperaeration, hyperalimentation, and in selected cases tuberculin do the rest.—I am, Sir, yours faithfully,

JAMES CROCKET, M.D.,
Lecturer on Tuberculosis, Glasgow University.

March 21st.

INSURANCE RECORDS: THE VIEW OF THE LONDON PANEL COMMITTEE.

To the Editor of THE LANCET.

SIR,—At their meeting on March 22nd the London Panel Committee directed me to send you a copy of the following resolutions:—

(*a*) That the Committee are of opinion that some form of medical record is necessary.
(*b*) That the Committee are of opinion that practitioners should not be required to enter matters on the record cards which in their opinion are likely to be detrimental to the interests of the insured persons concerned.
(*c*) That in the opinion of the London Panel Committee the present medical records are neither advantageous to the medical service nor beneficial to the community, and that it is desirable that they be discontinued forthwith.

I am, Sir, yours faithfully,

R. J. FARMAN,
Secretary, Panel Committee for the County of London.

Staple House, 51, Chancery-lane, W.C., March 24th, 1921.

THE FIGURES OF VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—In your Parliamentary Intelligence of March 26th Lord Knutsford is reported to have made the following statement in the House of Lords:—

"The figures of venereal disease in this country were almost too great to be believed. At the London Hospital alone they had 23,000 new cases last year. ....."

At a low computation each of these new cases would put in at least 12 attendances, so that the total number of attendances at the venereal department of that hospital would amount to considerably over a quarter of a million a year. As the total number of attendances at the department in 1919 was actually 24,499 Lord Knutsford was quite justified in his statement that "the figures of venereal disease in this country were almost too great to be believed." They most emphatically are. I am, Sir, yours faithfully,

Queen Anne-street, W., March 26th, 1921. J. ERNEST LANE.

"A VERY ENERGETIC PROPAGANDA."

To the Editor of THE LANCET.

SIR,—During the recent debate in the House of Lords on the report of the Special Committee on Venereal Diseases Viscount Knutsford urged the need of a "very energetic propaganda" directed towards the creation of a higher standard of morality and a lessening of the incidence of these diseases.

In this connexion a few figures as to the extent and scope of the propaganda undertaken in one year by the National Council for Combating Venereal Diseases may be of interest:—

Personal letters of inquiry received and answered by the medical department	33,000
Free pamphlets individually distributed, each pamphlet published or approved by the Ministry of Health and the N.C.C.V.D.	606,000

A very large number of addresses have been given to teachers, social organisations, employees of large firms and workshops, and to unselected audiences of the general public. It is impossible without special inquiry to estimate the numbers reached in this way by the 89 branches of the National Council, but the fact that one branch alone has reached 33,000 people during the last three months indicates the magnitude of this side of the work.

The cinematograph film has proved a most valuable addition to the propaganda material. Addresses have been given at exhibitions of approved films in more than 200 centres, the estimated number of such lectures being 718. Recent attendances at such displays as reported by local branches are: Gateshead (18 lectures), attendance 25,000; Plymouth (12 lectures), attendance 12,000; Leicester (24 lectures), attendance 23,000.

I am, Sir, yours faithfully,

E. O. GRANT,
Secretary, National Council for Combating Venereal Diseases.

March 26th, 1921.

THE DR. F. M. NEWTON FUND.

To the Editor of THE LANCET.

SIR,—Dr. Francis Morley Newton, medical officer of the Stoke-on-Trent Union Hospital, who died on Feb. 15th, 1920, left a widow and four children, aged 8, 7, 6, and 1½ years respectively. He suffered from asthma and diabetes and was unable to insure his life or to make provision in any other way for his family, so that their present financial position and future prospects are precarious. A fund in aid of the widow and children has been opened under a committee having for chairman Mr. R. H. Dickson, F.R.C.S. Irel., President of the North Staffordshire Medical Society, and Mr. W. Webster, F.R.C.S. Edin., as secretary.

Dr. Newton was educated at Epsom College and St. Bartholomew's Hospital. The committee feels that his friends or fellow students might wish to contribute to this fund, and takes the opportunity offered by your columns to reach them. Contributions will be gratefully acknowledged either by the chairman or secretary.

I am, Sir, yours faithfully,

WM. WEBSTER,
Secretary to the Fund.

64, King-street, Newcastle-under-Lyme, Staffs,
March 26th, 1921.

THE LABELLING OF THYROID TABLETS.

To the Editor of THE LANCET.

SIR,—We heartily support Dr. A. E. Carver's contention contained in his interesting letter in THE LANCET of March 12th on the prescribing of thyroid gland that the present slipshod method should be standardised. The dosage of all other widely used medicinal products is based on the dried substance, and why should an exception be made for thyroid gland? Would a pharmacist receiving a prescription for digitalis leaves assume for a minute that the doctor meant the moist as he did not state "exsic." or "desiccat.," and proceed to calculate how much of the dried powder he must dispense to be equivalent to the moist? What is absurd in the one case is equally absurd in the other. No doctor troubles himself about the ratio of dried product to moist for drugs other than thyroid. The system is purely a survival of a non-scientific basis.

Moreover, this mixed system is fraught with danger. For instance, a doctor prescribes 1 gr. of thyroid gland in tablet form and the pharmacist dispenses it, using, say, Jones's tablets, which are 1 gr. moist equivalent to 1/5 gr. dried substance. The patient now has a further supply, but from another pharmacist, who in this case, conforms to the B.P. standard and dispenses tablets which contain 1 gr. of the dried extract made by, say, Smith and Co. The patient finds a marked difference, it may be for the better or for the worse, and the doctor is puzzled. The prescriber never sees the bottle, and if he did most probably the issuing label would be covered by the pharmacist's dispensing label. We may add that in 1913 a paper was contributed from our laboratories to the Pharmaceutical Conference[1] using the argument which Dr. Carver now employs. Martindale and Squire, our two leading authorities after the B.P., both adopt the dried substance as their standard, and many of the leading manufacturers do the same.

Our experience does not conform with that of Messrs. Parke, Davis and Co. that prescribers mean "moist," for we made a large number of inquiries, and always had the same reply, that the "dried" substance was intended. In several cases the prescriber stated that the initial doses were always experimental and tentative, and the real dose required could only be decided by trial and result. We hope that this correspondence will do something to bring about a uniformity of prescribing and dispensing based on a more scientific and uniform principle.

We are, Sir, yours faithfully,

DUNCAN, FLOCKHART AND CO.

Edinburgh, March 22nd, 1921.

[1] Year Book of Pharmacy, 1913.

Obituary.

RUTHERFOORD JOHN PYE-SMITH, CH.M. SHEFF., F.R.C.S. ENG.,

EMERITUS PROFESSOR OF SURGERY IN THE UNIVERSITY OF SHEFFIELD, AND CONSULTING SURGEON, SHEFFIELD ROYAL HOSPITAL.

WE regret to learn the death of Rutherfoord John Pye-Smith, lately professor of surgery in the University of Sheffield, whose retirement from the medical profession only dates from a few months ago.

Rutherfoord Pye-Smith came of old Sheffield stock, his grandfather, John Pye-Smith, D.D., F.R.S., his father, Mr. Ebenezer Pye-Smith, F.R.C.S., being both Sheffield men, though the latter practised in London, where his third son was born in 1848. Like an elder brother, Philip, R. J. Pye-Smith was educated at Guy's Hospital, from which he qualified in 1872, becoming F.R.C.S. three years later. In 1876 he went to Sheffield as a general practitioner. He soon made his mark as a man of exceptional skill and versed in modern surgical procedure, which was at that date undergoing a revolution. He was appointed in 1877 honorary surgeon to the Public Hospital and Dispensary (now the Royal Hospital), where he became the pioneer of Listerism in the district, and as such quickly came into prominence. Younger men trained on the same lines soon appeared on the scene, but until his retirement Pye-Smith was always looked up to and respected as the doyen of surgery in Sheffield.

A colleague writes:—

When he began his career, like all other provincial surgeons of that time, he also carried on a general practice. In pre-Listerian days operative surgery alone was too scanty to provide a living, at any rate in the provinces, and it was necessary for surgeons to take general practice as well. Pye-Smith was almost the last of the local surgeons to do this, and he continued to do so more or less to the end of his career. As his surgical reputation grew and the amount of operative work demanded by the public increased, this combination of the two things made his work endless, and, as he could not bring himself to adopt modern labour-saving methods, it is difficult to understand how he got through his day's work. Motor-cars, typewriters, shorthand clerks—all these were anathema to him! For many years his single-horse brougham remained as the sole survivor of its kind amongst the profession! Every letter was in his own handwriting, and they were rarely less than four pages! No assistant prepared the patient for operation or put on the dressings after operation! Everything he did was done from beginning to end by himself. Perhaps the most striking tribute to his capacity for work, and his high sense of personal service, was the time which he devoted week by week to his hospital out-patients, even during the busiest part of his life. Four or five hours of his day, at least twice a week, would be given up to this part of his duties alone.

On the constitution of the University of Sheffield Pye-Smith was elected Professor of Surgery and gave long and valued services to the University, so that on retirement from his chair a few years ago he was rightly made Emeritus Professor, receiving also the honorary degree of M.Ch. in the University. In the affairs of the University, whether in the Faculty, Senate, or Council, he took an active part, rarely missing a meeting, while his frequent correction of the substance or the phraseology of the minutes or reports, of which he had always read every line, became a by-word amongst his colleagues. It was natural that he should be chosen to represent the University on the General Medical Council, where again his practical experience of the problems of education, learned in the evolution of the Sheffield Medical School, was often drawn upon by his colleagues.

During the war, though already showing distinct signs of strain from a life of incessant toil, he joined the staff of the Wharncliffe War Hospital, and in spite of remonstrances of friends, who saw how the work was telling upon him, he remained at his post until the conclusion of hostilities. But when the war was over he could not disguise from himself that his health was seriously affected, and a little less than two years ago

he retired from practice and went to live in the country. He ceased work however too late, and although for a time his health improved he succumbed to a brief attack of influenza on March 23rd at his house in Ampthill.

Professor Pye-Smith, though closely associated in our minds with the University with which he was connected during his long working life, may be regarded as a general leader in surgery—he was one of the focuses from which modern surgery, based on the discoveries of Lister, was distributed throughout the country. Outside his profession he was keenly devoted to art, for music, painting, architecture, and beautiful scenery all had their appeal for him. His holidays were usually spent in walking tours in some part of his native country. His disposition was serene, no one ever saw him ruffled or impatient, and in the difficulties of others he was always ready to act as mediator. A religious man by conviction and in practice, he was a great supporter of Congregationalism in Sheffield. He was also chairman of the Council of the Y.M.C.A. in that city. He led a full, arduous, and generous life, and few citizens can ever have been more widely and more deservedly regretted.

Dr. Ernest Hasler Helby, medical officer to Princetown prison, was killed on March 24th by a fall from his motor-cycle. Dr. Helby was a Middlesex Hospital man who, after qualifying in 1893, demonstrated in bacteriology at King's College, London, before entering the prison medical service. He was at Birmingham and Aylesbury before he was appointed to Princetown.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Medical Committee of the House of Commons.

THIS Committee met on March 21st in Room 13, House of Commons, Dr. NATHAN RAW in the chair, when Sir PHILIP MAGNUS submitted correspondence with the Ministry of Health on the subject of security of tenure of medical officers of health. A Bill drafted some years ago (Public Health Officers Bill) was considered. Sir PHILIP MAGNUS agreed to have the Bill brought up to date and submitted to the committee at a subsequent meeting.

A deputation from the Medico-Political Union, consisting of Dr A. WELPLY, Dr. GORDON WARD, Dr. MACDONALD, and Dr. GREIG, was then heard. Dr. WARD submitted objections to the new medical record cards, and Dr. GREIG submitted objections to the new regulations of the Ministry of Health, to come into force next year, concerning the transfer of practices. A discussion then took place, when the deputation was promised that the points suggested would have the attention of the Committee.

HOUSE OF LORDS.

MONDAY, MARCH 21ST.

Criminal Law Amendment Bill.

On the motion of the Bishop of LONDON, the Criminal Law Amendment Bill was read a third time and passed.

WEDNESDAY, MARCH 23RD.

Danger of Smuggled Foreign Dogs.

Lord BLEDISLOE asked the Government whether there were good grounds for suspecting that during the last few months dogs had been smuggled into this country from abroad, thus evading the quarantine regulations and constituting a source of danger to the community in the matter of the transmission of hydrophobia; whether the maximum penalty for such evasion was for the first offence only £20; and whether seeing that such a fine, in the absence of any discretion on the part of the Court to substitute imprisonment therefor, was an insufficient deterrent to many such offenders, the Government would so amend the Diseases of Animals Act, 1894, as to empower the Court to impose in the case of a first offence the more drastic penalties provided thereby in the case of a second or subsequent offence. It seemed, he said, to be the fashion to breed as small a dog as possible of the varieties known as Pomeranians, Belgian griffons, Blenheim spaniels, and more particularly Pekingese, so that it was comparatively easy to smuggle into this country in a lady's muff, or in a small portable basket, dogs arriving across the Channel. There was also the danger, which was becoming a very real risk, of possibly larger dogs being transported to this country by aircraft, and more especially military aircraft. This suggestion was strengthened by the location of the various confirmed outbreaks of rabies, as published by the Ministry of Agriculture. During 1919 there were 155 confirmed cases of rabies, largely in the South and West of England, and more or less in the neighbourhood of the camps; and in 1920, although the number was considerably reduced, no more than 42 outbreaks having taken place, much more than half those were in Wiltshire, which, of course, comprised Salisbury Plain, and in the three adjacent counties. Only five took place in all the rest of England. In the early part of this year the Army Council issued an instruction prohibiting the embarkation of any dogs with soldiers on transports or upon other means of conveyance to this country without a licence from the Minister of Agriculture. In the meantime, however, harm seemed to have been done by this illegal smuggling. A month ago the Masters of the Foxhounds Association passed a unanimous resolution urging the Government to take steps against this illicit importation of possibly diseased animals. A rabid dog was very seldom found wearing a muzzle, and it was therefore questionable whether muzzling, carried out sporadically in certain areas only, was an effective preventive of the spread of rabies.

Lord WILLOUGHBY DE BROKE, in supporting what Lord Bledisloe had said, remarked that not long ago a whole pack of foxhounds had to be destroyed. It seemed to him that lovers of Pekingese and Belgian griffons and such dogs appeared to lose all sense of public spirit in this regard, and it would be a great advantage if the Minister of Health would look into this matter and offer some kind of advice to the public against these dogs being allowed to lick dishes and plates in public restaurants as he had seen them do.

The Earl of CRAWFORD (Chancellor of the Duchy of Lancaster) said, with regard to the danger of smuggling dogs into the country by aircraft, he was informed that the Department of Agriculture, which had given the closest attention to the subject, had made inquiries and had satisfied itself that public aerodromes were now very well watched. The Department, however, was quite conscious that some smuggling might be attempted, and they were taking steps, which he would not particularise or describe, to reduce that danger to a minimum. As regarded fresh legislation, for the time being at any rate, the Board of Agriculture was of opinion that the present penalties, the danger of the quarantine, the guard of the Customs, and so forth, could be relied upon to keep disease out of the country; but if any evidence were forthcoming of fresh attempts to use the aeroplane for this specific purpose, the Ministry would be quite prepared to ask for increased penalties.

HOUSE OF COMMONS.

TUESDAY, MARCH 22ND.

Army Veterinary Service.

Sir L. WORTHINGTON-EVANS (Secretary for War) informed Colonel Sir A. HOLBROOK that the question of the amalgamation of the Army Veterinary Service with the Remount Service was not a new one. He was informed that it would not be practicable for the Army Veterinary Service to perform the duties of the Remount Service in addition to their own duties, and it was not considered that a saving would accrue from a combination of the two services even if this were feasible.

WEDNESDAY, MARCH 23RD.

Government's Opium Policy.

Mr. MONTAGU (Secretary for India) informed Sir J. D. REES and others that it was not proposed to make any change in the opium policy of the Government of India as a result of the recrudescence of poppy cultivation in China. The matter was now governed by the Hague Convention. Under that Convention, as China had prohibited the import of opium, India was bound to prevent the export of Indian opium to China. He was given to understand that the matter would be discussed by the Opium Advisory Committee of the League of Nations at the forthcoming Congress at Geneva.

Sanitary Arrangements of Caravans.

Major GLYN asked the Minister of Health what powers were possessed by the Ministry of Health to control the conditions and sanitary arrangements of caravans, especially when these had ceased to be really mobile and had settled in some field or vacant piece of land, joined shelters to the vans, and, without control or method, established a kind of encampment of vehicles, often a menace to the health of a

district.—Dr. ADDISON replied: The Ministry of Health have themselves no direct power in this matter, but the local authority can take action under the Nuisances Provisions of the Public Health Act where a tent, van, shed, or similar structure is in such a state as to be a nuisance or injurious to health, or is so overcrowded as to be injurious to the health of the inmates. The local authority can also make by-laws under Section 9 of the Housing of the Working Classes Act, 1885, for promoting cleanliness in, and the habitable condition of, such structures, and for the prevention of nuisances in connexion with them.

Venereal Disease.

Captain ELLIOT asked the Minister of Health whether he had at any time sanctioned the provision of public money, either out of the National Exchequer or out of local revenues, for the purposes of the National Council for Combating Venereal Diseases, either for the purpose of advertisement or for any other purpose; and, if so, whether he would specify what amount of money had been so provided in each of the financial years affected and on what purposes the money had been spent.—Dr. ADDISON replied: The reply to the first part of the question is in the affirmative. In accordance with the recommendation of the Royal Commission on Venereal Diseases the National Council for Combating Venereal Diseases has been recognised by the Government since 1916 as the authoritative body for the purpose of spreading knowledge and giving advice in regard to the question of venereal diseases in its varied aspects. During the years ended March 31st, 1919, and March 31st, 1920, grants were made to the National Council from the Exchequer amounting to £13,000 and £15,600 respectively, and the grant up to date during the current financial year amounts to £13,750. These grants have been paid in respect of expenditure incurred by the National Council in connexion with a campaign of publicity and education by means of lectures, meetings, exhibitions, and press advertisements, and by pamphlets, posters, and other literature. The grants for the current financial year and for 1919–20 included a proportionate sum for administrative expenditure. No grants are made direct by local authorities to the National Council, but some of these authorities have made contributions to local branches of the Council in aid of the propaganda and educational measures undertaken by those branches.

Captain ELLIOT: In view of the recent recommendations of the Birth Rate Commission will the right honourable gentleman see that steps are taken to persuade the two societies engaged in the campaign against venereal disease to coöperate instead of pulling in different directions?—Sir J. D. REES: Will the right honourable gentleman in this matter regard with suspicion reports of a profession which has reported that victorious England has a C 3 population?—Dr. ADDISON: I cannot agree with these generalisations. I have done everything I can to get these two different bodies to work together and am continuing to do so.

Infant Mortality in London.

Mr. GILBERT asked the Minister of Health what had been the rate of infant mortality during the last four years in London, and what had been the cost on the rates during the same period of maternity and child welfare centres established in the London area.—Dr. ADDISON replied: The rate of infant mortality in London has fallen during the last four years as follows: 1917, 104; 1918, 108; 1919, 85; and 1920, 75. The average cost to the rates of London of the Maternity and Child Welfare Service was during each of the last four years considerably less than 1*d.* per £ of assessable value.

Death-rate from Phthisis and Tuberculosis.

Captain ELLIOT asked the Minister of Health the number of deaths and the death-rate per 1000 from phthisis and tuberculosis, all forms, in 1920, and similar figures for the previous five years; and whether, as a measure of public economy, he proposed to reduce the number of sanatoriums and beds available for coping with this disease.—Dr. ADDISON replied: The total deaths during the past six years from 1915–20 inclusive from all forms of tuberculosis were as follows: 54,295, 53,858, 55,934, 58,073, 46,312, 42,545. The death-rates per 100,000 of the population for the same years were as follows: 151·5, 152·9, 162·4, 169·4, 125·8, 112·8. As I have already stated, the figures for the last two years were the most encouraging we have had since the inception of the national scheme for the treatment of tuberculosis. The answer to the last part of the question is in the negative.

Grants for Tuberculosis, Maternity, and Venereal Disease.

Mr. BRIANT asked the Minister of Health what were the grants towards the services for tuberculosis, maternity welfare, and venereal disease for London during the last year; and if there had been any reduction in infant mortality since the grants in aid were issued.—Dr. ADDISON replied: The grants paid to local authorities in London during the last completed financial year in respect of the services mentioned were: tuberculosis, £49,195; maternity and child welfare, £39,763; venereal disease, £35,543; total, £124,501. The mortality-rates are given in my reply to the honourable Member for Central Southwark. The total expenditure in all these services combined out of an average rate in London of 14*s.* 5*d.* for the year 1920–21 was 2½*d.*

Birth-, Death-, and Marriage-rates in Ireland.

Lieutenant-Colonel ALLEN asked the Chief Secretary to the Lord Lieutenant of Ireland the birth-, death-, and marriage-rates, respectively, in Ireland for the years 1910, 1914, and 1920.—Sir H. GREENWOOD replied: The figures per 1000 of the population are as follows:—1910: marriages 5·04, births 23·3, deaths 17·1; 1914: marriages 5·41; births 22·6, deaths 16·3; 1920: marriages 6·18, births 22·2, deaths 14·9.

Washington Maternity Convention.

Mr. CLYNES asked the Prime Minister whether, in view of the great importance of the Washington convention on maternity, and also of the widespread opinion that the draft conventions of the Washington conference must be submitted to Parliament, an opportunity would be given after Easter to discuss the Government's policy on the maternity convention, and also the Ministerial declaration that it was for the Government to decide whether any particular convention should be submitted to Parliament.—Mr. LLOYD GEORGE (Prime Minister) replied: I would refer my right honourable friend to a reply given on Feb. 22nd in which a promise was given by my right honourable friend the Member for the Central Division of Glasgow to the effect that consideration would be given to this subject in the event of a question being put after Easter.

Condensed Milk Standard.

Mr. GRATTAN DOYLE asked the Minister of Health whether he was aware that the draft regulations based on the Committee's recommendations for a standard of condensed milk were at direct variance with the bulk of the evidence submitted by interests concerned; and whether the Committee's report and recommendations would be published.—Dr. ADDISON replied: I understand that the standards recommended by the Committee are not substantially different from those which were advocated by the majority of trade witnesses except in the case of one variety (full cream unsweetened) where a somewhat lower standard has been adopted. I am prepared to publish the Committee's report if there is any general desire to that effect.

Nation's Supply of Potable Water.

Major KELLEY asked the Minister of Health whether he had received any recommendations for the conservation and allocation of the nation's supplies of potable water; and whether he proposed to take action to reserve sources of water-supply for towns such as Rotherham, whose populations were certain to expand greatly, but whose areas did not adjoin any watershed unpolluted by industry or agriculture.—Dr. ADDISON replied: Recommendations on the subjects contained in the first part of the question are made in the Second Interim Report of the Water Power Resources Committee (Cmd. 79). These have been under my consideration, but it is not practicable to propose legislation on the subject at present.

Pre-war Naval Disability Pensioners.

Lieutenant-Colonel ARTHUR MURRAY asked the Secretary to the Admiralty whether naval officers who were invalided out of the service before the war, but who served during the war, were to be included amongst the pre-war disability pensioners.—Sir J. CRAIG (Parliamentary Secretary to the Admiralty): The answer is in the negative.

Coroners Remuneration Bill.

Major STEEL asked the Prime Minister whether he would give facilities for the second reading and subsequent stages of the Coroners (Remuneration) Bill in order that this Bill might be passed quickly into law.—Mr. LLOYD GEORGE replied: The Government do not oppose the second reading of this Bill, but it must take its chance with other private Bills.

BRITISH ASSOCIATION.—**The next meeting** is announced to take place at Edinburgh from Sept. 7th–14th. On the evening of the opening day Sir Edward Thorpe will deliver his presidential address. Sir J. Frazer is to preside over the section of Anthropology, Sir Walter Fletcher over that of Physiology, and Professor C. Lloyd Morgan over that of Psychology. Biochemistry, Vocational Tests, and the Relation of Genetics to Agriculture are to receive their share of attention.

LONDON TEMPERANCE HOSPITAL.—**An entertainment**, including a musical programme and amateur theatricals will be given by the nursing staff of this institution on April 13th, 14th, and 16th at 8 P.M. The entertainment is in aid of the building fund and will be held in the out-patient hall of the hospital. The prices of admission to reserved seats are 10*s.* 6*d.*, 5*s.*, 2*s.* 6*d.*, and 1*s.* Tickets can be obtained from the matron at the hospital.

Medical News.

UNIVERSITY OF CAMBRIDGE: DIPLOMA OF PSYCHOLOGICAL MEDICINE.—A five weeks' revision course for the diploma examination will be held in Cambridge from July 18th to August 20th. The course will include lectures and laboratory work on the Anatomy and Physiology of the Nervous System (Dr. C. R. A. Thacker), and on Psychology (Dr. J. P. Lawson) for Part I. of the examination, and lectures and clinical work on Psychopathology (Dr. C. S. Myers and Dr. J. F. E. Prideaux) and Mental Diseases (Dr. M. A. Archdale) for Part II. The fee for the whole course is 12 guineas. That for the course for Part I. or Part II. alone is 6 guineas. The examination for Part I. (Anatomy and Physiology of the Nervous System, and Psychology) is held in October, and that for Part II. (Neurology and Psychiatry) in December. Further information may be obtained from the Secretary to the D.P.M. Committee, Psychological Laboratory, Downing-street, Cambridge.

UNIVERSITY OF LEEDS.—Dr. R. J. Stewart McDowall, whose appointment to the University lectureship in experimental physiology and experimental pharmacology was noted last week, was in 1917 specialist sanitary officer in charge of the Palestine water-supplies, which included the pipe line across the Sinai Desert, and was later deputy assistant director of medical services for the British Forces in Palestine, Syria, and Cilicia. Since demobilisation he worked under Sir E. Sharpey Schafer in the physiology department of the University of Edinburgh, surrendering the positions of lecturer in that department and of clinical tutor in medicine at the Royal Infirmary under Sir Robert Philip to come to Leeds. He was a member of the International Congress of Physiology held in Paris last year and is on the general and organising committee of the physiology section of the British Association.

UNIVERSITY OF LIVERPOOL.—**At examinations held** recently the following candidates were successful:—

DEGREE OF M.D.

Amy Hodgson and N. W. Walmsley.

FINAL EXAMINATION FOR DEGREES OF M.B., CH.B.

Part III.—Eileen Dowling, F. H. Edwards, S. Farris, W. S. Gilmour, H. T. Hughes, R. M. Jones, Florence M. Lamport, R. F. J. Martin, F. G. Pailthorpe, J. H. Pottinger, A. McK. Reid, and J. C. Twomey.

Part II.—G. C. Bhatia, Eleanor E. Briant, H. R. Chibber (distinction in Forensic Medicine and Toxicology), and C. Cookson.

Part I.—Ethel Ashton, H. R. Chibber, G. Clark, H. M. Cohen, R. W. Cowie, J. Elsohn, I. S. Fox, H. S. Gordon, R. C. Gubbins, W. D. Jeans, T. Knowles, Mary E. Nosworthy, G. Sanders, S. G. Sheir, Mary D. H. Sheridan, W. T. de V. Thomson, Mary G. T. Williams, and D. A. Woodeson.

Honours, Class II.—J. G. L. Jones (distinction in Obstetrics).

DIPLOMA IN PUBLIC HEALTH.

A. J. Hawes, J. O. Murray, and L. B. Stott.

DIPLOMA IN TROPICAL MEDICINE.

R. Nixon, A. S. Richmond, J. M. Skinner, R. B. Stewart, and Marion Thomson.

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

C. C. Anderson, J. H. Mather, R. E. Roberts, and R. I. C. Rodgers.

UNIVERSITY OF ABERDEEN.—**The following candidates** have passed the Final Professional Examination in Medicine:—

Charles Davidson Allan, John James Hall Anderson, Nicholas C. Bodenstein, Foong K. Chen, John Craig, Lilian Fyfe Gall, Ronald K. Grant, G. W. Hay, Eleanora M. P. Law, Margaret Lipp, Matthew H. Logg, Douglas R. Macdonald, Alexander McKay, Elsie Mackie, Katherina F. E. van der Merwe, Mary G. Milne, Dorothy Mitchell, John I. Moir, Marian Elizabeth Mowat, J. M. H. Murray, Janet Cruickshank Nicol, Mary Milne Pyper, Alexander E. Reid, Edwin N. D. Repper, James P. J. Rossouw, George Saint, Norman Charles Simpson, G. Violet G. Smith, Ian R. Spark, Alexander L. G. Thomson, Ian S. Thomson, and A. R. Wood.

WORK OF THE CITY CORONER DURING 1920.—Dr. F. J. Waldo, J.P., H.M. City coroner, held during the year 1920 599 inquiries in the City of London, including H.M. prison at Holloway, as well as in Southwark. Post-mortem examinations were ordered and carried out in all but 14 inquests of death. Juries were summoned in all cases except those of a few natural deaths; Dr. Waldo maintains this constitutional and popular pre-war method on the principle that the coöperation of an intelligent jury, such as can be found in the City, secures a better and more satisfactory tribunal than that constituted by a coroner sitting alone. Among the inquests held were two cases of murder, 2 of manslaughter, 1 of justifiable homicide, 1 of felo-de-se, 22 of suicide, and 1 of arson. Inquests were held on 24 children under the age of 1 year and on 52 between the ages of 1 and 16 years. Fifty-eight fatalities (28 in the City, 30 in Southwark) were due to vehicles. Dr. Waldo, backed by his juries, has made frequent appeals to the Minister of Transport, the Home Secretary and Police, the London County Council, and the various local road authorities for more street refuges, more police at fixed crossings to assist foot-passengers across congested streets, and compulsory side life-guards on all heavy commercial motors, similar to those in use on motor omnibuses; but his recommendations have so far met with little notice. An inquest was held on the body of one infant accidentally suffocated whilst in bed with the parents, this figure being the lowest ever recorded. The marked general decrease throughout England and Wales during the past few years in this class of preventable death has, in the coroner's opinion, much less to do with the question of drink than with the more general use of cots and cradles. The holding of more autopsies has been an important factor in the lessening in the number of these deaths. Inquests were held in only 8 cases (3 in the City, 5 in Southwark) of sudden death accelerated by the administration of anæsthetics for surgical operations. As heretofore, the deaths occurred during the use of chloroform or a mixture containing chloroform.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.—A special post-graduate course is to be held from Monday, April 25th, to Saturday, May 7th, inclusive. At 10.30 A.M. and 11.45 A.M. each day practical demonstrations will be given on the more important clinical and laboratory methods applicable in medical practice. In the afternoons at 2 P.M. demonstrations will be given on groups of cases illustrating special subjects, and at 3 P.M. on selected cases in various departments of practice. At 4.30 P.M. each day there will be either a clinical lecture (free to qualified medical practitioners) to be delivered by Sir William Hale-White, Sir Thomas Oliver, Sir Henry Gauvain, Mr. H. D. Gillies, Dr. P. Manson-Bahr, Dr. Frederic Thomson, and others, or clinical consultations on obscure medical and surgical cases. On Saturdays demonstrations will be given on the Early Diagnosis of the Infectious Fevers at the North-Eastern Fever Hospital, St. Ann's-road, London, N., and on cases of Insanity Associated with Epilepsy at the L.C.C. Mental Hospital, New Southgate, London, N. Further information and syllabus of the course may be obtained from the Dean of the College at the Prince of Wales's General Hospital, Tottenham, N. 15.

HORSHAM COTTAGE HOSPITAL.—**The governors of** the Horsham Cottage Hospital have found it incumbent upon them to increase the fees of the patients rather than let the institution run into serious debt. Increased expenditure consequent upon high prices has not been met by a corresponding increase in the receipts, and at the twenty-ninth annual meeting held on March 23rd it was unanimously agreed that each patient should pay such weekly contribution as the committee may fix, not being less than 7*s.* 6*d.* or more than £2 2*s.*, the committee still holding the power to remit the whole or part of such payment at its discretion; and that the minimum fee for private patients be £5 5*s.* per week, in addition to dressings, extras ordered by the doctor, and a special nurse or nurses, should such be required. There were 228 patients admitted during the year, including 30 accident cases; 100 major operations and 204 minor operations were performed. The number of patients (228) was the highest on record. Although the governors have some £10,000 in hand for the enlargement of the hospital it has been decided that the building scheme must remain in abeyance owing to the high cost of materials and labour.

THE LATE DR. J. D. KENNY.—**John Drought Kenny**, whose death occurred on March 9th at his residence, The Grange, Wickersley, near Rotherham, was a native of Ireland, and obtained his medical education at Queen's College, Galway, and at the Ledwick School and Adelaide Hospital, Dublin. At the Ledwick School he was first prizeman in practice of medicine. He qualified in 1884, and in 1887 went to Yorkshire, where, after acting for some time as assistant to the late Dr. Lyth, of Rotherham, he settled down in practice in the village of Treeton, where he remained for the next 25 years. He soon built up a large practice, gaining the esteem and affection of all classes by his good nature and devotion to work, and he will long be remembered by the poor of the village for the help he gave them in money and provisions during a long and serious coal strike. His patients and friends showed their appreciation by presenting him with a motor-car when in 1912 he left them to take up practice in Wickersley. He held numerous appointments under the guardians, the Yorkshire Coal-owners Indemnity Company, and various colliery companies, and he also took much interest in ambulance work; for his services in the latter connexion he was made, in 1911, an honorary associate of the Order of St. John of Jerusalem. His death occurred from pneumonia after a few days' illness, and came as a great shock to his many friends. He is survived by his widow.

SUMMER TIME, 1921.—The Home Secretary has fixed summer time this year to commence on Sunday, April 3rd, at 2 to 3 A.M.

GENERAL HOSPITAL, BIRMINGHAM.—The annual meeting was held on March 16th, under the presidency of the Bishop of Birmingham. The report stated that the main difficulties to be faced were lack of funds and of accommodation. The ordinary subscriptions and donations showed a steady increase and several large and unexpected donations had been received. In December the National Relief Fund made a donation of £17,800 towards that part of the debt contracted owing to war conditions, and this, added to the £40,014 obtained by the sale of securities, enabled the hospital to be temporarily free from debt. But such additions to the funds could not be expected in the future, and without other sources of income the hospital must sell further securities or greatly reduce its work. The average cost of each in-patient was £9 9*s.* 11*d.*, as compared with £7 11*s.* 7*d.* for the previous year. The total expenditure was £93,734 and the receipts £63,599, an excess of expenditure over income of £30,135. These figures are exclusive of the sums received from the National Relief Fund and from the sale of securities. The hospital had received £9000 from the Hospital Saturday Fund, as compared with £6000 last year, in addition to a grant of £1000 for the Jaffray Hospital. From the Hospital Sunday Fund was received a sum of £2834, an increase of £822 on last year. The number of in-patients was 6930, an increase of 486. The daily average number in hospital was 335, an increase of 20 on the average of the last five years. The out-patients numbered 42,376, as against 39,330 in 1919; 5923 operations were performed during the year.

Medical Diary.

SOCIETIES.

BIRMINGHAM MEDICAL PSYCHOLOGICAL SOCIETY.
WEDNESDAY, April 6th.—4.15 P.M., Paper:—Dr. R. M. Ladell: Some Problems in the Treatment of Pensioners.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, April 4th.—2 P.M., Dr. S. Pinchin: Medical Out-patients. Dr. Simson: Diseases of Women. Dr. Morton: X Ray Department. 2.30 P.M., Mr. Baldwin: Visit to Surgical Wards.
TUESDAY.—10 A.M., Mr. Steadman: Dental Department. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Skin Department. 2.30 P.M., Dr. Pritchard: Visit to Medical Wards.
WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. D. Armour: Visit to Surgical Wards. Mr. Sinclair: Surgical Out-patients. Mr. Gibb: Eye Department.
THURSDAY.—2 P.M., Mr. B. Harman: Eye Department. Mr. MacDonald: Surgical Out-patients. Mr. D. Armour: Operations. Mr. Baldwin: Orthopædic Department.
FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations and Visit to Wards. Dr. McDougal: Electrical Department. 2 P.M., Mr. T. Gray: Surgical Out-patients. Dr. Burnford: Medical Out-patients. 2.30 P.M., Mr. Addison; Visit to Surgical Wards.
SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients.
Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.
Post-Graduate Course on Infant and Child Welfare.
A Course of Twelve Practical Demonstrations on the Management and Feeding of Infants and Young Children by Dr. E. Pritchard to Qualified Practitioners.
TUESDAY, April 5th.—10.30 A.M., Demonstration I., Causes of Infant Mortality.
THURSDAY.—3 P.M., Demonstration II., How to Conduct an Infant Consultation, Examine an Infant, and Keep Records.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
THURSDAY, April 7th.—6 P.M., Chesterfield Lecture:—Dr. W. K. Sibley: Seborrhœa and Psoriasis.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.
MONDAY, April 4th.—5 P.M., General Meeting.
TUESDAY.—3 P.M., Lecture:—Prof. R. A. Sampson: Present Position of the Nebular Hypothesis.
THURSDAY.—3 P.M., Tyndall Lectures (I.):—Mr. C. T. R. Wilson: Thunderstorms.
FRIDAY.—8 P.M., Discourse:—Dr. R. H. A. Plimmer: Quality of Protein in Nutrition.
SATURDAY.—3 P.M., Lecture:—Dr. H. H. Dale: Poisons and Antidotes.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, April 5th.—4.30 P.M., Lecture:—Mr. W. H. Hey: The Diagnosis of the Chronic Abdomen.

Appointments.

KEYNES, G. L., M.D., B.Ch. Camb., F.R.C.S. Eng., has been appointed Assistant Surgeon, City of London Truss Society.

Certifying Surgeons under the Factory and Workshop Acts: ORR, J. (Eccles); MCCALL, G. B., M.D. Dub. (Kirkby Lonsdale); BIRTWHISTLE, F. P. H., M.D. Manch. (Barton-on-Humber); STORRS, C. S., M.D. Camb. (Colne); SOMMERVILLE, M., M.B., Ch.B. Glasg. (Shap); PHILIPSON, G. R., M.B., B.S. Durh. (Allendale).

Vacancies.

For further information refer to the advertisement columns.

Barnsley and Wakefield Joint Sanatorium Committee.—Asst. Tuberc. O. and Res. M.O. at Mount Vernon Sanatorium. £400.
Barrow-in-Furness, North Lonsdale Hospital.—Second Res. H.S. £225.
Birmingham General Hospital.—Asst. Visit. Anæsth. £50. Res. Anæsth., H.S., £100 each. H.S. to Skin and Venereal Depts. £125. Cas. H.S. £100.
Birmingham and Midland Homœopathic Hospital.—Res. H.S. £175.
Birmingham, Rubery Hill and Hollymoor Mental Hospital.—Jun. Asst. M.O. £400.
Bootle Borough Hospital.—Third H.S. £120.
Bristol General Hospital.—H.S. £175.
Denbigh Mental Hospital.—Jun. Asst. M.O.—£400.
Dumfries, Crichton Royal Mental Hospital.—Clin. Path. £400.
Eccles Borough.—M.O.H. and Sch. M.O. £800
Enham Village Centre for Disabled Ex-Service Men, Andover, Hants.—Asst. M.O. £250.
Gloucester County Asylum.—Jun. Asst. M.O. £300.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Hastings Education Committee.—Asst. Sch. M.O. £500.
Herefordshire General Hospital.—H.S. £200.
Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.—Anæsth. £50.
Hospital for Sick Children, Great Ormond-street, London, W.C.—Asst. Cas. M.O., H.S., and H.P. £50 each.
Hospital for Women, Soho-square, W.—Res. M.O. £100.
Huddersfield Royal Infirmary.—Two Jun. H.S.'s. £150.
Isle of Wight County Mental Hospital.—Asst. M.O. £300.
King's College Hospital, Denmark Hill, S.E.—Hon. Jun. Dent. S.
Kirkburton, Storthes Hall Asylum, near Huddersfield.—Asst. M.O. £400.
Leith Hospital.—Res. H.P. 50 gs.
Liverpool, Royal Southern Hospital.—Two H.P.'s and two H.S.'s. £120 each.
London Jewish Hospital, Stepney Green, E.—Clin. Asst. Ophthalmic Dept. £80.
London Lock Hospital, 91, Dean-street, W.—Pathologist. £500.
Manchester, Ancoats Hospital, Mill-street.—Med. Registrar and Surg. Registrar. £100 each. Res. Surg. O. £250. Res. H.P. £200. Anæsth. 10*s.* 6*d.* per attendance. Female M.O. 3 gs. per clinic.
Manchester Children's Hospital, Gartside-street.—Asst. M.O. £200.
Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—P. Dent. S., and Radiographer. Also Jun. Res. M.O. £120.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Sen. Res. M.O. £350.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Asst. P.
Newcastle-upon-Tyne, City Mental Hospital, Gosforth.—Jun. Asst. M.O. £400.
Newport, Mon., Royal Gwent Hospital.—H.S. £200.
Northampton General Hospital.—H.S. £200.
North Riding of Yorkshire County Council.—Tuberc. O. £700.
Nottingham, Bagthorpe Institution and Infirmary.—Res. Asst. M.O. £300.
Ochil Hills Sanatorium, near Milnathort.—Res. Med. Supt. £500.
Paddington Green Children's Hospital, London, W.—H.P. £150. H.S. £150.
Prince of Wales's General Hospital, Tottenham, N.—H.P., H.S. £200. Jun. H.S., Jun. H.P. £120.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Cas. H.S., Asst. Cas. O. £100.
Reading, Royal Berkshire Hospital.—Second H.S. £200.
Rotherham Hospital.—Jun. H.S. £150.
Royal General Dispensary, Bartholomew Close, E.C.—Res. M.O. £175.
St. Bartholomew's Hospital Medical School.—Chair of Anatomy. £900.
St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—Jun. H.S. £75.
St. Thomas's Hospital, Albert Embankment, S.E.—Jun. Asst. in Venereal Department. £400.
Salford Royal Hospital.—H.S.'s £150. Cas. H.S. £150. Also Anæsth. £50.
Sheffield, East End Branch of the Children's Hospital.—H.S. £150.
Sheffield Royal Hospital.—H.S. and Asst. Cas. O. £150.
Sheffield Royal Infirmary.—Three H.S.'s, two H.P.'s, Aural H.S., and Asst. Cas. O. £150 each.
South Eastern Hospital for Children, Sydenham, S.E.—Hon. Asst. P. and Hon. Asst. S.
Southampton Free Eye Hospital.—Asst. Hon. Ophth. Surg.
University College Hospital.—Obstet. Registrar. £150.
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West London Hospital, Hammersmith-road, W.—Cas. O. £5 5*s.* per week.
Winchester, Royal Hampshire County Hospital.—Sec. Res. M.O. £200.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.
Wolverhampton and Staffordshire General Hospital.—H.S. £200.

Worcester County and City Mental Hospital, Powick.—Sen. Asst. M.O. £450.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for an Inspector of Factories under the Factory and Workshop Acts at West Bromwich.

Births, Marriages, and Deaths.

BIRTHS.

ASH.—On March 26th, at Crowborough House, Crowborough, Sussex, the wife of Richard Guy Ash, L.D.S.R.C.S. Eng., of a daughter.

FRANKAU.—On March 24th, at Wyndham-place, W., the wife of Claude Frankau, C.B.E., D.S.O., F.R.C.S., of a son.

GROVE WHITE.—On March 23rd, at Gledhow-gardens, South Kensington, the wife of Captain J. H. Grove White, I.M.S. (retired), of a son.

LESCHER.—On the 25th March, at 48, Kedleston-road, Derby, to Bridget, wife of Dr. Frank Graham Lescher, M.C., B.A., M.B. Cantab., a daughter—Bridget Mary.

DEATHS.

PYE-SMITH.—Rutherfoord John Pye-Smith, J.P., F.R.C.S., late of Sheffield, on the 23rd March, at his house in Ampthill, Beds., after three days' illness. Aged 73. Funeral 29th, 2.30, at Ampthill.

SHAW.—On March 17th, suddenly, Lawrence Drew Shaw, D.S.O., M.B., Ch.B., Harley-street, London, W., and late of Tientsin, China.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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A.—Dr. E. E. Atkin, Lond.; Dr. H. el Arculli, Liverpool; Dr. G. Alexander, Furness; Automatic and Electric Furnaces, Ltd., Lond., Managing Director of; Dr. E. D. Adrian, Cambridge.

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N.—National Council for Combating Venereal Diseases, Lond.; National Anæsthesia Research Society, Columbus, Ohio; National League for Health, Maternity and Child Welfare, Lond.; National Housing and Town Planning Council, Lond.

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X.—X Rays, Ltd., Lond.

THE meeting of the Section of Psychiatry of the Royal Society of Medicine arranged for April 12th will not take place.

BOOKS, ETC., RECEIVED.

ALLAN, PHILIP, AND CO., London.
Pilgrim's Books. No. 5: The Art of High Life. Pp. 271. 5*s*.
The Things which are Seen: A Revaluation of the Visual Arts. By A. Trystan Edwards, M.A. Pp. 354. 18*s*.

ALLEN, GEORGE, AND UNWIN, London.
Pure Thought and the Riddle of the Universe. By Francis Sedlák. Pp. 375. 18*s*.
Woman. By Magdeleine Marx. Introduction by Henri Barbusse. Translated by A. S. Seltzer. Pp. 288. 7*s*. 6*d*.

BIRCHER, E., Leipzig.
Die Ultra- und Polarisations-Mikroskopische Erforschung des Lebenden Auges und ihre Ergebnisse. Von Dr. L. Koeppe. Pp. 270. 20 Schweizer Franken.

F. A. DAVIS COMPANY, Philadelphia.
Practical Psychology and Psychiatry. By C. B. Burr, M.D. 5th ed. Pp. 268. $2.00.

DUCKWORTH AND CO., London.
Hunger. By Knut Hamsun. Translated from the Norwegian by G. Egerton. Pp. 310. 8*s*. 6*d*.

HODDER AND STOUGHTON, London.
The Constitution of the United States: an Introductory Public Lecture delivered under the Rhodes Benefaction at University College, Jan. 17th, 1921. By the Hon. J. W. Davis. Pp. 36. 1*s*. 6*d*

KARGER, S., Berlin.
Kompendium der Speziellen Chirurgie für Studierende und Aerzte. Neu bearbeitet. Von Dr. F. Erkes und Dr. B. O. Pribram. 12-14 auflage. Pp. 422.

LE FRANÇOIS, Paris.
Les Cardio-Rénaux: Étude Théorique et Pratique. Par le Docteur O. Josué et le Docteur Maurice Parturier. Pp. 230 Fr.12.

MASSON ET CIE, Paris.
Chirurgie de l'Œil et de ses Annexes. Par F. Terrien, Professeur Agrégé à la Faculté de Médecine de Paris. 2nd ed. Pp. 620. Fr.50.
Le Sympathique et les Systèmes Associés: Anatomie Clinique, Sémiologie et Pathologie Générale du Système Neuro-Glandulaire de la Vie Organo-Végétative. Par A.-C. Guillaume. Preface du Prof. Pierre Marie. 2nd ed. Pp. 396. Fr.18.
Examen des Aliénés: Nouvelles Méthodes, Biologiques et Cliniques. Par le Dr. André Barbé, Médecin Aliéniste des Hôpitaux de Paris. Préface de M. le Dr. Séglas. Pp. 178. Fr.8.

OLIVER AND BOYD, London and Edinburgh.
The Clinical Study and Treatment of Sick Children. By J. Thomson, M.D. 3rd ed., rewritten and greatly enlarged. Pp. 912. 32*s*. 6*d*.

PUTNAM'S (G. P.) SONS, London and New York.
"Wade In, Sanitary!" The Story of a Division Surgeon in France. By Lieut.-Colonel R. Derby, U.S. Army. Pp. 260. 12*s*.
Pope's Manual of Nursing Procedure. By A. E. Pope. Pp. 596. 18*s*.

RESEARCH LABORATORY, PARKE, DAVIS, AND CO., Detroit, U.S.A.
Collected Papers. Edited by Dr. E. M. Houghton. Pp. 489. Vol. I.

ROUTLEDGE GEORGE, AND SONS, London. DUTTON, E. P., New York.
The Origin and Problem of Life: A Psycho-Physiological Study. By A. E. Baines. Pp. 98. 3*s*. 6*d*.

SPRINGER, JULIUS, Berlin.
Einführung in die Physikalische Chemie. Von Dr. Walther Dietrich. Pp. 106. M.20.
Die Innere Sekretion. Von Dr. A. Weil. Pp. 140. M.28.

SWARTHMORE PRESS, London.
Quaker Aspects of Truth. By E. Vipont Brown, M.D. Pp. 156. 5*s*.

THIEME, G., Leipzig.
Monographien über die Zeugung beim Menschen. Von Dr. Hermann Rohleder. Band V.: Die Zeugung bei Hermaphroditen Kryptorchen, Mikrorchen und Kastraten. Pp. 143. Band VII.: Die künstliche Zeugung (Befruchtung) im Tierreich. Pp. 128. M.42.

UNIVERSITY OF TORONTO PRESS.
Notes on the Medical Treatment of Disease. For Students and Young Practitioners of Medicine. By R. D. Rudolf, M.D. Pp. 457.

URBAN AND SCHWARZENBERG, Berlin and Vienna.
Leitfaden der Neurologischen Diagnostik. Von Dr. Kurt Singer. Pp. 201.
Lehrbuch der Nervenkrankheiten. Von R. Bing. Pp. 672.
Infektion und Immunität. Von Dr. M. Loewit und Dr. G. Bayer. Pp. 550. M.80
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OBSERVATIONS ON SOME OF THE DISEASES OF ANIMALS COMMUNICABLE TO MAN.[1]

BY FREDERICK HOBDAY, C.M.G., F.R.C.V.S., F.R.S.E.,
HONORARY VETERINARY SURGEON TO H.M. THE KING; FORMERLY PROFESSOR OF THERAPEUTICS AND HYGIENE IN THE ROYAL VETERINARY COLLEGE, LONDON.

STUDENTS of human medicine have nowadays become specialists and subdivided specialists, and students of veterinary medicine have done the same, but there is still room for further specialism—that is, for those who will bridge the gap which divides the two, and specialise in comparative medicine; by which I mean the study of the analogies and differences shown in diseases intercommunicable between men and the various species of animals which, having no thought for the future, only live (some of them very short lives) to look forward to a meal, to automatic sleep, and to the excitement of an occasional fight or love affair.

By the study of comparative medicine our sphere of knowledge may be greatly enlarged, and by comparison of symptomatology, of the sites especially affected, of immunity and susceptibility we shall progress forward more rapidly in the fight against disease, and investigators will often save themselves much of the time at present lost in following unnecessary side-tracks. Knowledge of the fact that certain species of animals are refractory, or even completely immune, to certain diseases is also of enormous value and must always have a satisfactory explanation, if only the latter can be discovered. There is no better illustration of such immunity than that of the ox tribe to the disease known as glanders. Why should the ox be immune to glanders when the horse, ass, mule, certain carnivora, and man fall easy victims? A knowledge of the diseases of animals communicable to man cannot but be beneficial to the worker in human pathology; and the number of diseases concerned is astonishing. The comparative aspect of any one of them could be made the subject of a separate paper, but my intention here is to generalise, and to introduce the names of certain diseases met with in Great Britain, communicable from animals to man, with the object of drawing attention to the great value of a knowledge of the comparative aspect of each; and, in order to attain that knowledge, the necessity for collaboration and cooperation between the medical and veterinary professions.

I am sure that individual experiences of others will add emphasis to the above remarks, and will perhaps form the basis of some scheme advantageous to both medical and veterinary practice.

Communicable Diseases.

We have at the present time, in Great Britain at least, the following which are indisputably communicable: glanders, anthrax, tuberculosis, rabies, foot-and-mouth disease, mange of all animals (horse, ox, camel, dog, cat), ringworm (especially of horse, calf, cat, and mouse), certain forms of seborrhœa (such as farriers get from handling horses with greasy legs); and I think that the great prevalence of pyorrhœa in pet dogs (which are often kissed and allowed to lick the lips and hands of their owners) should be regarded as a possible contributive factor towards that disease in human beings; pyorrhœa may at some future date be definitely added to the list.

Others, produced by parasites which require an animal host in order to make their life-cycle complete before they can become pathogenic to man, are *Echinococcus*, the *Cysticercus bovis* (the larval stage of the *Tænia saginata* of man), and *Cysticercus cellulosæ* (the larval stage of *Tænia solium*), the parasites of measly beef and measly pork respectively, and the *Trichina spiralis* of the muscles of the pig, which gives rise in countries where ham is largely eaten smoked and not necessarily cooked, to trichinosis in man.

I now propose briefly to take each condition in turn and consider the most important points affecting both man and the lower animal, and discuss how the veterinary surgeon can help his medical confrère. I would particularly emphasise a careful consideration of glanders, anthrax, rabies, foot and mouth disease, and certain forms of mange and ringworm, as their only source is from some species of animal, and when we of the veterinary world have stamped out these diseases completely from our patients they will automatically cease to exist in man; the attainment of this result cannot but add credit to the study of comparative medicine.

Tuberculosis stands in a category by itself, as not only is it contagious from man to man, animal to animal, and animal to man, but it also does its work insidiously through milk, which is so necessary as a food for children; and even when the animal is dead its meat is still dangerous, being still, in many instances, only perfunctorily inspected. It is to our shame to have to admit how backward England is in this matter.

Glanders.

Glanders is a particularly good disease with which to begin the list, as when it is eliminated from the veterinary schedule it will become unknown as a disease of mankind. Even now a medical man is frequently puzzled when confronted with a patient suffering from this infection, so rarely is it seen; but the veterinary surgeon, with the aid of mallein, can almost invariably make his diagnosis with certainty and within 48 hours. Here the veterinary profession has to lead the way, and that it is doing its duty in this respect is shown by the fact that in 1901 (only 20 years ago) some 2370 horses were destroyed for glanders in Great Britain (1828 of these coming from London), and that the present statistics of the Veterinary Department of the Ministry of Agriculture show that during the past year (1920) only 15 outbreaks occurred in the whole of the British Isles, with a total destruction of only 22 animals; and this, too, after the sale of some 150,000 army horses and mules gathered together from various countries and employed in the war. In mallein we have a sure diagnostic test; by its use glanders was kept completely under control amongst the British horses and mules during the recent war; I believe I am correct in saying that during that time no case of glanders in man was ever reported; whereas, during the South African campaign, glanders was terribly rife amongst animals and caused endless anxiety both to veterinary and medical officers.

Some 15 or 20 years ago, in the districts of London which contained large cab and omnibus stables it was a rare thing for a County Council veterinary inspector to have a day go by without being called in to see a suspected case of glanders, and I recollect one stud of only about 2000 horses from which some 90 glandered were taken within 12 months. Mallein was then in its trial stage, and the law did not enforce its compulsory use on the in-contact cases, the consequence being that when the owner of the stable had an outbreak of glanders he promptly sent the in-contact animals to a repository, and thus disseminated the disease broadcast. Twice I have officially been present at the post-mortem examination of men who had died of the disease, and in neither case was the disease suspected until just before death, one being treated for pleurisy and the other for rheumatism.

At the present time the use of mallein is compulsorily applied by law to all ponies before they are sent underground for colliery work. When an outbreak takes place in a stud or stable in any part of the British Isles the whole of the "in-contacts" are immediately quarantined and tested. All reactors are destroyed, all suspects set aside and retested until the veterinary inspector is satisfied that a clean certificate can be given to the stud.

During the late war special precautions were taken by the officers of the Royal Army Veterinary Corps to isolate and mallein all animals on purchase and again on admission to and evacuation from veterinary hospitals. All units were malleined at regular intervals, and before being finally sold, either for work or human food, all animals were submitted to this test. In this way millions of doses were used, but the result justified the trouble taken, and no army of the whole Allied force was so free from glanders as ours. The infection is usually transmitted to man from a glandered horse, ass, or mule by means of nasal discharge, discharge from a farcy bud, or contact of an abraded surface with a sponge, brush, or stable utensil which has become contaminated with some of the infectious discharge from the animal. The possibility of infection of man by ingestion also was drawn attention to by the late Mr. W. Hunting, the chief veterinary inspector of the London County Council, who observed men handling the nostrils of infected horses and then eating their bread-and-meat or bread-and-cheese without washing their hands. The men most commonly affected are those whose life brings them into contact with horses, and one has only to read the medical press to see the hopelessness of treatment when once the disease has become established.

I believe I am correct when I say that there is only one instance on record where a human patient has survived and permanently become clear of a glanders infection, the fortunate man being a well-known member of my own profession, but it was only after endless operations and several years of painful treatment that his medical advisers were

[1] An illustrated lecture delivered (Feb. 3rd, 1921) before a combined meeting of the Royal Society of Medicine and the Central Branch of the National Veterinary Association.

able to certify a cure. One of those who died of this disease last year was a veterinary bacteriologist of the Government of India, a man of great promise, the disease being contracted during the course of his duty.

Glanders in carnivorous animals has been observed in lions fed in a zoological garden on infected horseflesh which was given raw.

It is gratifying to read in the annual report of Sir Stewart Stockman, the chief veterinary officer of the Ministry of Agriculture, that "this disease is now approaching the point of eradication." When that is accomplished in horses there will also be one less disease for the human race to fear.

Anthrax.

Anthrax still takes its toll of both animal and man, being met with in the latter principally amongst those who have to deal with animal products, such as skin, hair, wool, and hides from abroad, and those who make or assist at post-mortem examinations of dead animals. Mention of infected Japanese shaving brushes, which have lately been referred to in the medical and lay press, must not be omitted. With the veterinary surgeon the disease is seen most commonly in cattle, although one meets with it in the horse, sheep, pig, and even the dog, the latter animal being rather more refractory than the others.

The returns of the chief veterinary officer of the Ministry of Agriculture for 1919 show that Wales had been absolutely free for three years, but that 180 outbreaks were confirmed in England and 59 in Scotland. In all, 275 cattle, 8 horses, 1 sheep, 38 pigs, 1 dog, and 7 ferrets were affected. Twenty-five per cent. of the outbreaks occurred on premises where anthrax had occurred the previous year. The annual average, owing to precautions taken by the officials of the Ministry, has been reduced from about 1000 between 1907 and 1910 to 239 in 1919. The disease is troublesome and difficult to control, but the measures at present taken appear to be keeping it in check.

If only the disinfection of imported things such as hides, wool, hair, &c., can be thoroughly controlled we shall hear of fewer cases in man; the same may be said of the supply of cotton and other cakes imported into Great Britain as a food for cattle. The following were the surmises made as to the source of the 1919 outbreak. (1) Effluent of tanneries or other similar industries getting into streams; (2) feeding of infected offal to pigs; (3) use of imported foodstuffs and artificial manures; (4) contaminated sewage; (5) contact with infected material of other outbreaks.

It is thus by attention to complete disinfection of animal products and sources of contamination by animal products that we shall diminish the chances of human infection. For animals themselves it is a more difficult problem, as so much of their food material must of necessity come from abroad, a good deal of it from countries in which anthrax exists to a considerable extent. The destruction of the spores is the chief difficulty, but a good fight is being maintained, and if only the disease can be kept under control among farm animals the veterinary profession will be doing a good deal towards helping to make it a rare disease in man.

Rabies.

Rabies has had no place in this country for nearly 20 years until lately; the present inconvenience from which dog owners in several parts of England have to suffer is entirely due to the surreptitious importation of some dog in the incubation stage of the disease. All continental countries, with the exception of Norway, Sweden, and Denmark, are infected; although mainly seen in the dog, rabies is also met with in horses, cows, sheep, cats, foxes, wolves, and even fowls, in some of which it produces a train of rather curious symptoms, which to the layman may not give any suspicion of the disease, and thus disaster may be led up to.

Everyone knows something about the suspicious signs in the dog, although the classical symptoms are by no means constant. The change of manner, the desire to hide in dark corners, great excitability towards strange people and strange dogs, restlessness and weariness, snapping at imaginary flies, the attempts to chew and futile attempts to swallow all objects near at hand, the inability to swallow water, the continual salivation, and final violent rage in the mad form—or the typically dropped jaw in the paralytic form—are all characteristic of the rabid dog. It is strange, too, what long distances they will cover in their unconscious frenzy, wandering aimlessly on for miles; and it is for this reason that sometimes a large area or district has to be placed under the restrictions of the Ministry of Agriculture. The voice, too, becomes altered, the bark being hoarse and accompanied by a most peculiar howl, the sound of which when once heard is never forgotten. Paralysis of the hind-quarters and complete exhaustion and coma finally supervene if the disease is allowed to run its course.

In the cat the symptoms are even more violent than in the dog and a rabid cat is even more to be feared by man than a dog. It will bite and scratch, attacking men and animals in a most reckless fashion. The voice changes in tone and, as with the dog, paralysis of the hind-quarters eventually follows. In the horse and ox there is violent excitement; a particular symptom which has been noted again and again is an attempt to bite or rub the scar of the original site of infection, as it is practically always from the bite of a rabid animal that their infection occurs. Sexual excitement is often present. Paralysis of the hind-quarters is the common sequel in all instances, and the disease is always fatal.

The 1919 annual report of the Chief Veterinary Officer of the Ministry of Agriculture showed that 143 cases of rabies were confirmed in that year, there being 140 dogs, 2 horses, and 1 pig. The first case was imported into Plymouth somewhere about May, 1918, and it is to this piece of criminal thoughtlessness on the part of someone that we owe the fact that we are now again an infected country. During 1919 alone some 179 persons were bitten by animals in the scheduled areas, 46 of whom were bitten by animals proved to be rabid. Treatment was arranged by the medical officer of the Ministry of Health, and it is a triumph to the memory of Pasteur that there have been no deaths from hydrophobia.

By the present arrangements the neck and head of any dog which has died or been killed as a rabies suspect is dispatched at once to the veterinary laboratory of the Ministry of Agriculture, together with a history from the field veterinary inspector who made the post mortem. This is then dealt with at once; the Negri bodies are searched for, and if necessary inoculation experiments are made. The result has worked out that in 96 per cent. of cases a decision could be given at once, thus saving those patients who had been bitten much suspense and anxiety; and, what is more, enabling the medical officer to advise and urge immediate anti-rabies treatment.

At the present time the necessity for the muzzling order still exists in certain areas, and both medical and veterinary practitioners must be on the look out for rabies; but there is no doubt that what has been done before can be done again; an island like ours can be rendered free from rabies.

Foot-and-Mouth Disease.

Foot-and-mouth disease, as a disease communicable from animals to man, does not bear quite the same importance as the diseases previously alluded to, but it is important, because, if neglected, it would cause a certain amount of trouble through ingestion of milk. Such trouble is not at all uncommon in countries where foot-and-mouth disease is indigenous; at the present moment in England I am given to understand that there now exists at least one definite case of contagion in an official who was constantly examining mouths and feet. Foot-and-mouth infection can only come from infected cattle, and the disease can also be transmitted not only to man but to the sheep, goat, and pig, whilst horses and fowls are not immune.

In most European countries it always exists, and it is owing to our insular position and to precautions taken by the Ministry of Agriculture that this country was entirely free from 1895 to 1899, and again from 1903 to 1908, with the exception of two small outbreaks which were easily suppressed. The present outbreak is very obscure in origin, and as the virus is invisible and the disease one of the most insidious and contagious in existence, it has presented many difficulties. Had it not been taken firmly in hand at once it would certainly have cost agriculturists millions of pounds, and it is highly probable that another disease would have been added to the medical practitioner's list. As an indication to what extent it will spread it is only necessary to mention that in 1892 in Germany no less than 1,504,299 cattle, 2,193,157 sheep, 17,782 goats, and 438,262 pigs were affected, whilst in other continental countries it raged with equal violence.

Even so recently as the spring of 1919 the North of Italy was visited by a very virulent form, and a great many of the agriculturists of the provinces of Milan, Turin, Tuscany, and Cremona were ruined in consequence, as it affected not only milking cattle but also working bullocks.

Mange.

With regard to mange, the parasite of the disease is in all animals; it is always a source of danger to man, and infection has been noted on many occasions. Three varieties of parasite are found on the horse—a sarcopt, a psoropt, and a symbiot, but it is the two former which give trouble, and man is infected by contact with mangy horses, grooming tools, food utensils, &c., usually on the chest (especially if hairy), the under surface of the forearm, and the hands. Riding a mangy horse has been known to infect men down the inside of the legs and in the pubic region, and during the recent war this form frequently occurred. Knackermen are often infected when employed in skinning mangy horses. Sarcoptic mange is very troublesome to get rid of in the horse, requiring several months, but the psoroptic variety is much more amenable to treatment.

Sulphur in some form or other is the basis of most treatments. In Great Britain it is a notifiable disease.

That mange in the dog and cat is transmissible to man does not seem so generally known and appreciated as it ought to be, and some time ago Dr. A. Whitfield and I published the histories of 17 cases in which he confirmed the existence of the sarcoptic parasite in the human subject, and I confirmed it in the dog. The owner of a mangy small dog is often found to complain of an irritable skin, usually the region of the inside of the forearm, where the dog rests its head when being nursed. The contact of the warm flesh causes the mange parasite to leave its original host and transmit itself to the human flesh, where it sets up considerable irritation. In some of these 17 instances infection had taken place in the region of the neck and chest, and in one on the abdomen, as a result of the objectionable habit of allowing the little dog to sleep in that situation. The lesions produced were described by Dr. Whitfield as small vesicles, slightly smaller than the ordinary eczema vesicle and surrounded by a narrow zone of hyperæmia, very like that of varicella, only about one-eighth of the size. These lesions were scattered discretely over the surface and not in grouped lesions. The intense irritation leads to decapitation of the little vesicles, and their original site becomes covered with either a serous or a blood scab. If left untreated the parasite will live in the human subject for about six weeks, but if treated, I am told that it is readily got rid of.

In the dog we have two varieties of parasite, the *Sarcoptis canis* and the *Demodex folliculorum*; the latter gives the veterinarian endless trouble, and both are infectious to man. Sarcoptic mange yields readily to treatment, but it takes about a month or six weeks to effect a certain cure. If neglected the dog becomes covered with scabs and sores, gets thin and emaciated, has a peculiar mousy odour, and will eventually die.

I have with me to-night a cat, the subject of sarcoptic mange, really so loathsome and miserable an object that one cannot understand the owner or her servants not having observed its condition long before. This animal has been infected for some weeks and has been wandering about the house without restriction. The uncastrated male cat is, in all large towns, a fruitful source of the spread of sarcoptic mange amongst the females, and, indeed, to other males with whom he is constantly at war.

Ringworm.

Ringworm of the horse, calf, dog, and cat are the ones which interest us most to-night from the point of view of contagion to man. All are contagious and give considerable trouble in their treatment. In country districts the calves are the constant source of infection, in town the cat is mostly the culprit. Dr. Whitfield has recorded several such cases, as have also others.

Measles in Beef and Pork.

Measly beef is, as you know, due to the *Cysticercus bovis*, the larval form of the *Tænia saginata* of man. The *Cysticercus cellulosæ* in the muscle of the pig is the larval form of the *Tænia solium* in man. It is to be remarked that the general neglect of proper meat inspection in England is lamentable. Fortunately we cook our food well, and to this custom we owe a good deal of freedom from disease.

Trichinosis.

Trichinosis is a parasitic affection in the muscles of the pig, from which it is transmitted to man in sausages or other infected food which has not been thoroughly cooked. Dogs and rats, amongst other animals, are also subjects of this disease; the pig is infected by eating rats and mice and the flesh and offal of other infected pigs. The disease is met with in Germany, America, and other countries, special systems of meat inspection being necessary on account of its prevalence.

Tuberculosis.

The subject of tuberculosis had, perhaps, better be left to be introduced and discussed on another occasion. It is contagious from animals to man, and the questions of clean milk and clean meat are too important for casual treatment. Before the war the matter of a clean milk-supply and the eradication of tuberculosis from our herds of cattle was being taken up with vigour, and it is soon to be taken up again. It is very necessary to root this disease out from our herds in order to assist in its disappearance from man. I merely mention it, for the subject has so many sides to it that I feel we could not half do it justice.

Conclusion.

In conclusion, I wish again to draw attention to the part played by animals in transmission of certain diseases to man, and to emphasise the extent of ground common to workers in human and veterinary medical science. By joint action much valuable time may be saved and much better results obtained than by holding aloof in separate compartments.

TAPEWORM HOSPITALITY.

To the Editor of THE LANCET.

SIR,—A patient in Khartoum Civil Hospital, treated once in the ordinary way with filix mas, has produced 31 specimens of *Tænia saginata*. Is this a record?

I am, Sir, yours faithfully,

V. S. HODSON,
Director, Khartoum and Omdurman Civil General Hospitals.

March 10th, 1921.

PRACTICE BY FOREIGNERS IN CHILI.

FOREIGNERS in Chili are becoming aware of the turn of the screw against internal competition by non-Chilians in various trades and professions. For some years the law has forbidden medical practice to any who do not hold the State diploma, but until lately the interpretation of this law was not strict. The attention of the local medical society was directed by a practitioner to the position of the resident medical officer of the English hospital, with the result that his and all medical diplomas were carefully scrutinised. The three assistants at the German hospital are in similar case and a German dentist has already been obliged to leave Valparaiso.

LEARNED SOCIETIES.

THE thirty-seventh annual issue of the Year Book of the Learned Societies of Great Britain and Ireland (London: C. Griffin and Co., Ltd. Pp. 354. 15s.) is compiled from official sources and purports to be a record of work done in science, literature, and art during the session 1919–20. The claim is a large one and its full execution beyond human endeavour, while we gladly acknowledge to finding the year book a valuable book of reference, giving, as it does, not only the addresses, names of officials, dates of meeting, and other useful information, but also lists of the papers read at the different societies. A comparison of the current issue with its predecessor shows that, while a few societies have ceased operation, others have come into being, and necessitated an addition of nearly 20 pages to the book. Medicine, which in 1919 occupied 35 pages, now occupies 41, and biology, including microscopy and anthropology, which formerly had 44 pages devoted to it, now has 47. Psychology remains as previously with 7 pages, and general science with 53 pages. The field of medicine is not quite evenly covered, for while the programme of St. Mary's Hospital Medical Society, which includes papers by Sir Almroth Wright and others, is given, there is no mention of other students' societies of older foundation, such as the Abernethian Society of St. Bartholomew's, the Hunterian Society of St. George's, or the Physical Society of Guy's.

THE REMOVAL OF TATTOO MARKS.

AS a result of the social upheavals of the war many persons have emerged from strata of society where tattooing is regarded as highly artistic to find themselves in strata where it is looked upon as vulgar and the badge of a savage. Little wonder, therefore, that a fresh impulse has been given to the art—a highly complicated and difficult art—of removing tattoo marks without further disfiguring the skin. Even in the time of the Roman Empire many devices were employed towards this end, and a paper by Dr. P. Cattani of Zurich (*Schweizerische Medizinische Wochenschrift*, Feb. 10th) shows that as many as 13 totally different methods have been devised, none of which can be said to be at once painless, easy, and effective. His detailed description of each method reveals an extraordinary degree of ingenuity on the part of cosmetic specialists, and, in some cases, marvellous powers of endurance on the part of their patrons. Dr. Cattani himself has practised only a few of these methods, and the four which he finds the most successful are Variot's, galvano-cauterisation under local anæsthesia, "harpooning" or digging out each granule of pigment (Wederhake's method), and excision of the skin. Variot's procedure begins with a preliminary cleansing of the skin, on which a concentrated aqueous solution of tannin is applied. With the tattoo needle the pigmented area is now freely punctured, and into the punctures thus made silver nitrate is repeatedly rubbed, and the skin is then strewed with powdered tannin. A protective dressing is applied, and after a short time a violent inflammatory reaction follows, with swelling and necrosis of the skin. After two to four weeks the crust thus formed is discharged, and the underlying structures, which are at first red, pale gradually in a few months. A slightly raised scar is left to indicate the original site of the tattooing. Dr. Cattani has never seen permanent ill-effects follow this method which, he admits, is painful as well as requiring much time and patience. He refers to a fatal case recorded by Parent-Duchatelet in 1857. The patient was a prostitute, whose reaction to the removal of tattoo marks by caustics terminated in death. To judge by Dr. Cattani's accounts of this and other methods of removing tattoo marks, it is abundantly evident that prevention is better than cure.